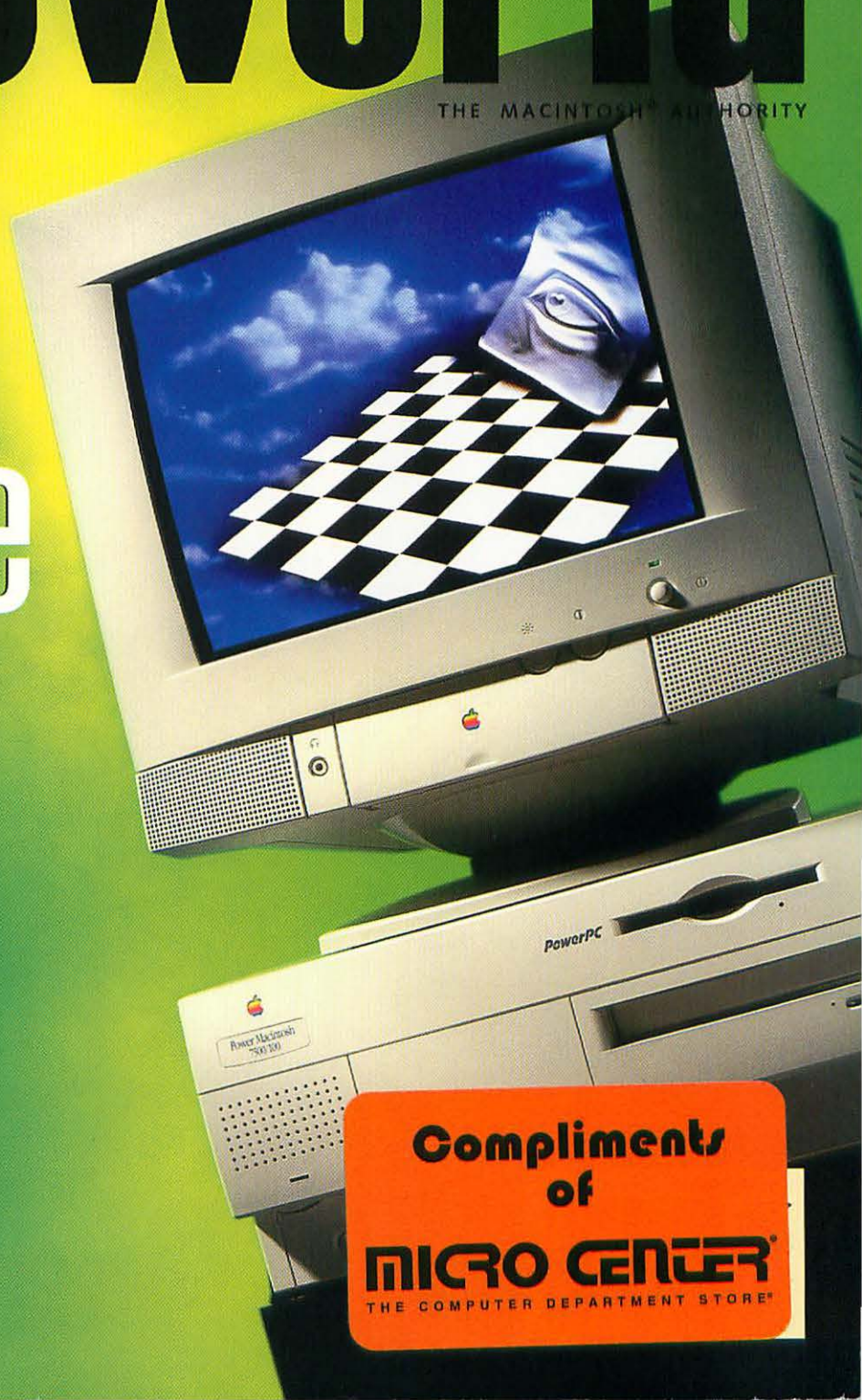
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# Macworld

THE MACINTOSH® AUTHORITY




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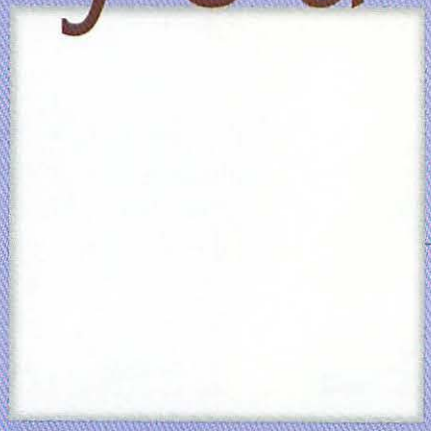
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When

Where

How

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You compare

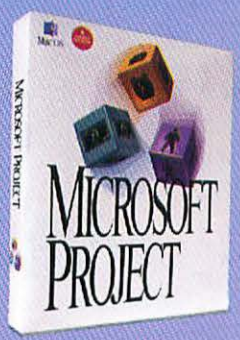
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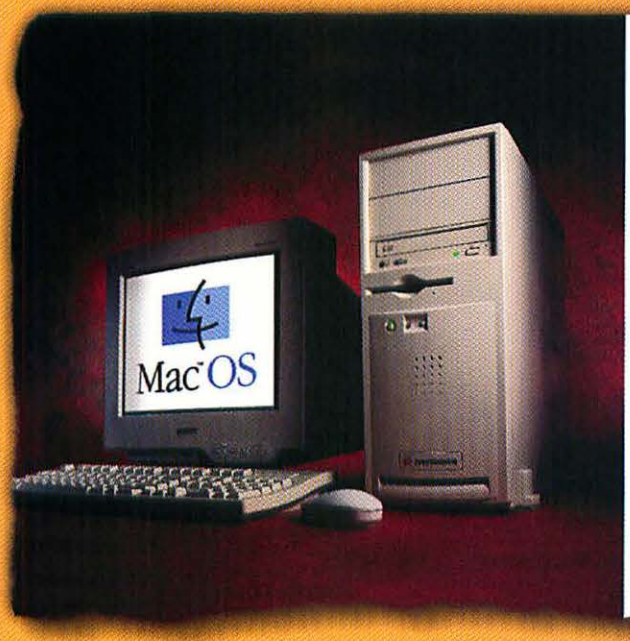
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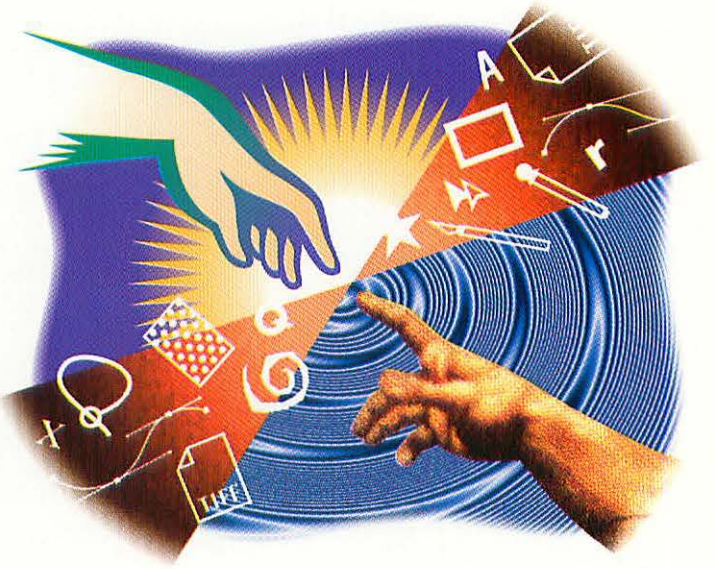
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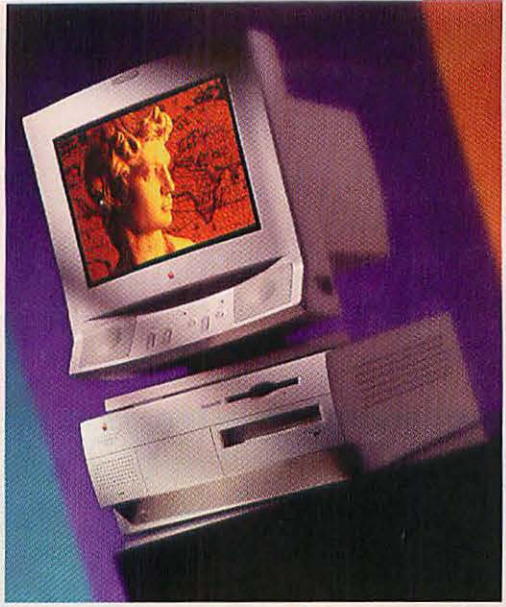

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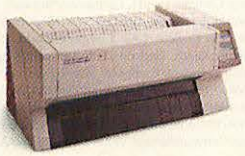
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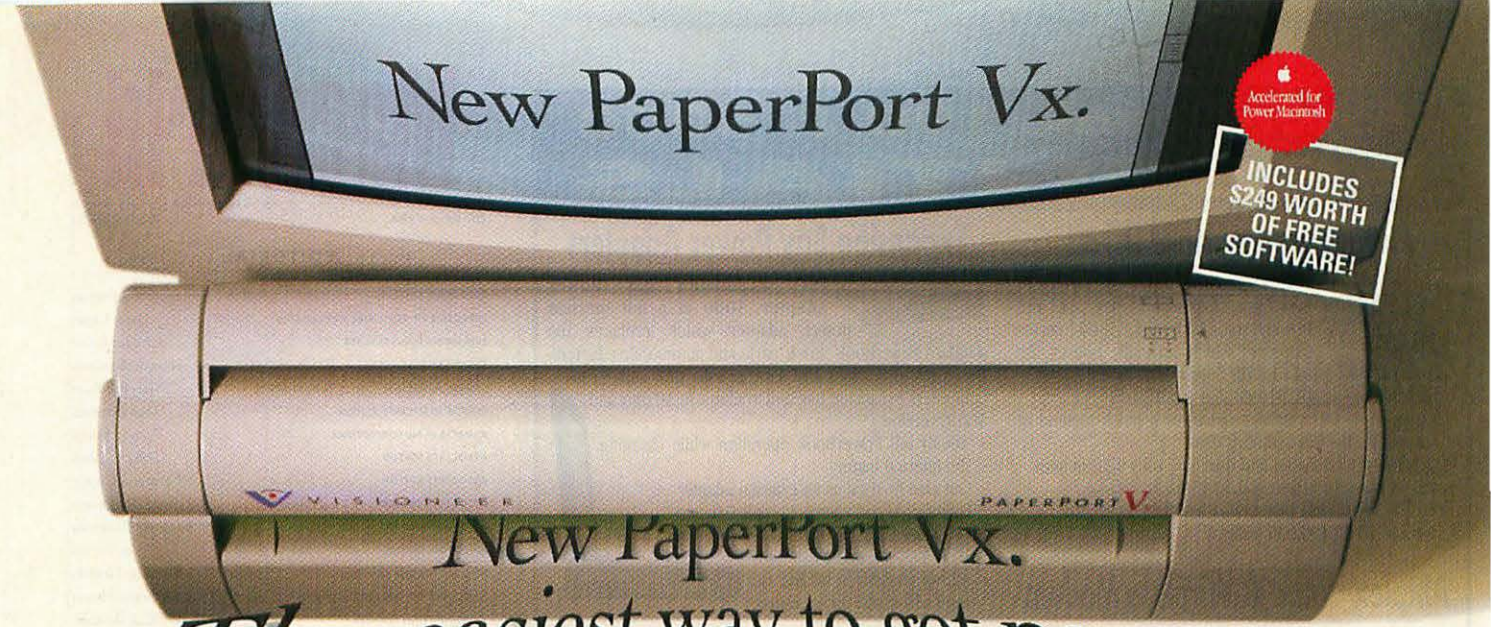
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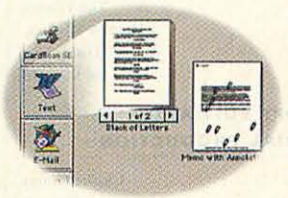
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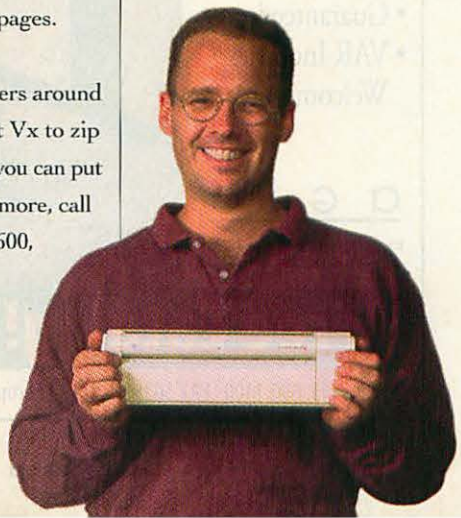
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# PowerBook 190 & 5300 ESSENTIALS

## Expansion Bay Hard Drives



VST's **Expansion Bay Hard Drives** fit into the expansion bay of the PowerBook 190 and 5300 series computers which normally houses the Apple 1.4MB floppy drive module.

- Available in 540MB, 810MB and 1.2GB sizes
- Allow ample extra storage space, or a quick method of backing up the internal hard drive
- Light weight, compact, and durable - only 9-10 ounces
- Access times average less than 15ms
- Time to ready after insertion is less than 3 seconds.
- Average MTBF 150,000 hours

## AIRplex™ Mac IR Wireless Modem



**AIRplex Mac** Infrared Fax/Modem PC Card allows PowerBook 190, 5300, and 500 users to access their favorite online service, receive e-mail and send faxes without wired connections.

- Connects to a standard telephone jack
- Uses wireless omnidirectional infrared signalling - not affected by obstructions
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## Expansion Bay Power Adapters



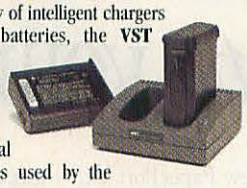
VST's **Expansion Bay Power Adapter 5000** is a full function power adapter which replaces the standard PowerBook "brick" style and automobile adapters. Designed to fit into the PowerBook 190 and 5300 computers expansion bay, and available in AC only and AC/DC version.



- Allows full PowerBook operation while charging the internal battery
- Can also be used as an external adapter
- Lightweight and compact - only 9 ounces!
- Operates from 90-120Vac / 200-240Vac, 50-60 Hz, 75-95 VA, and 11 - 18Vdc
- Allows worldwide AC and DC inputs from any power source

## VST Charger 5000

The second in VST's family of intelligent chargers for Apple's intelligent batteries, the **VST Charger 5000** works with the Lithium Ion (Li-Ion) batteries used by the new PowerBook 5300s and the Nickel Metal Hydride (NiMH) batteries used by the new PowerBook 190s.



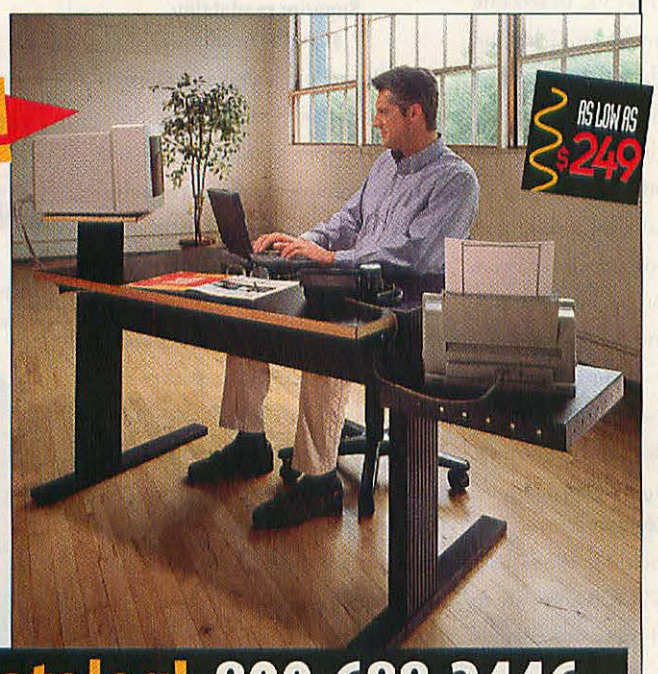
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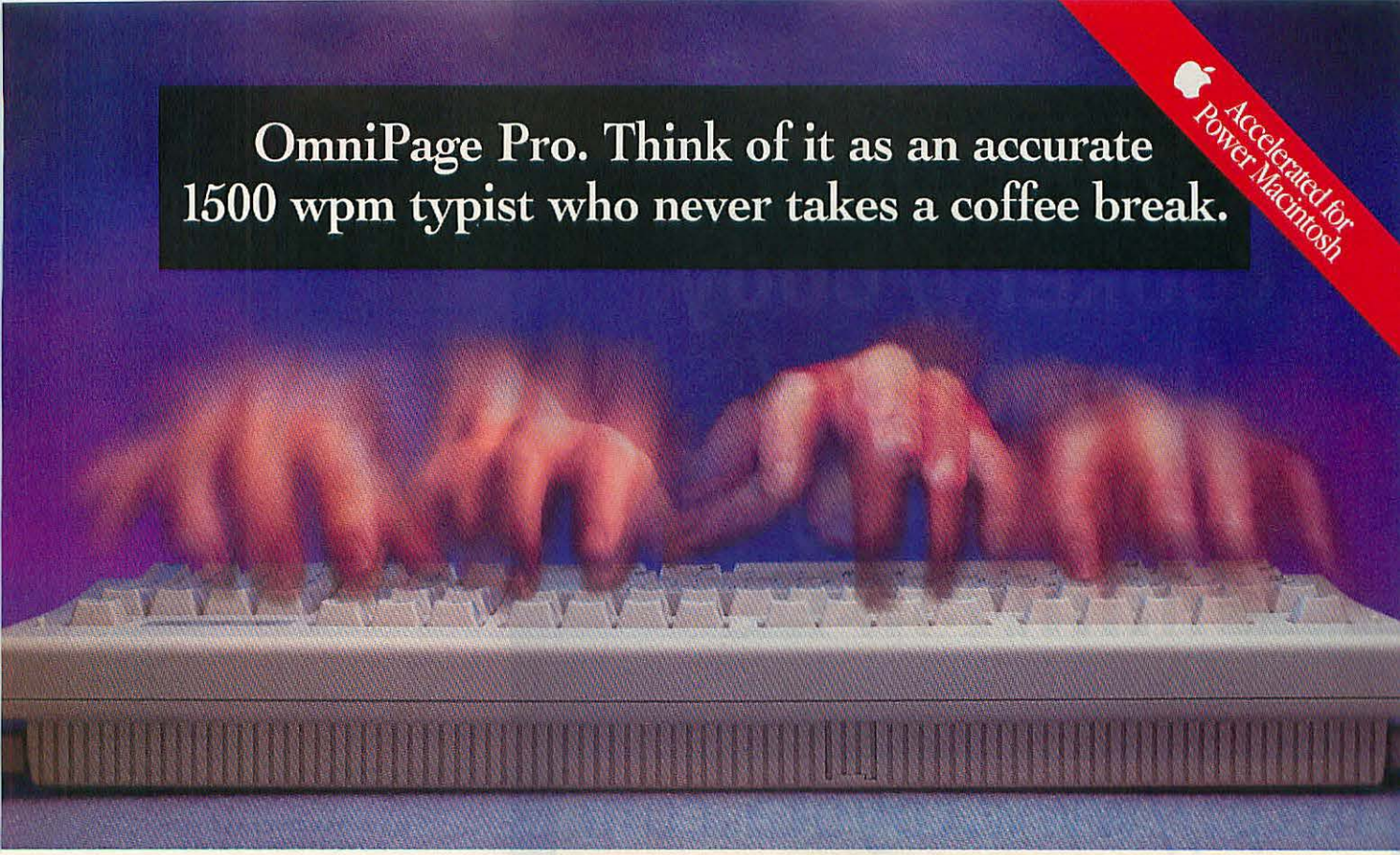
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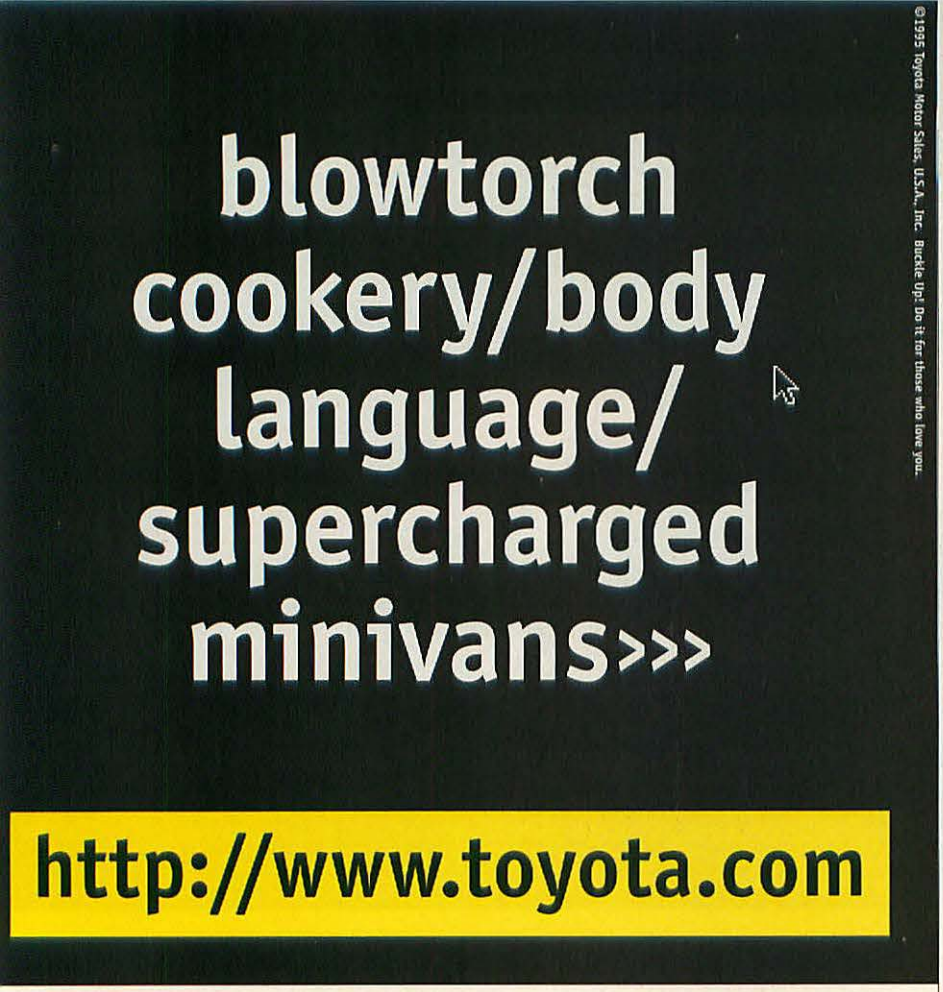
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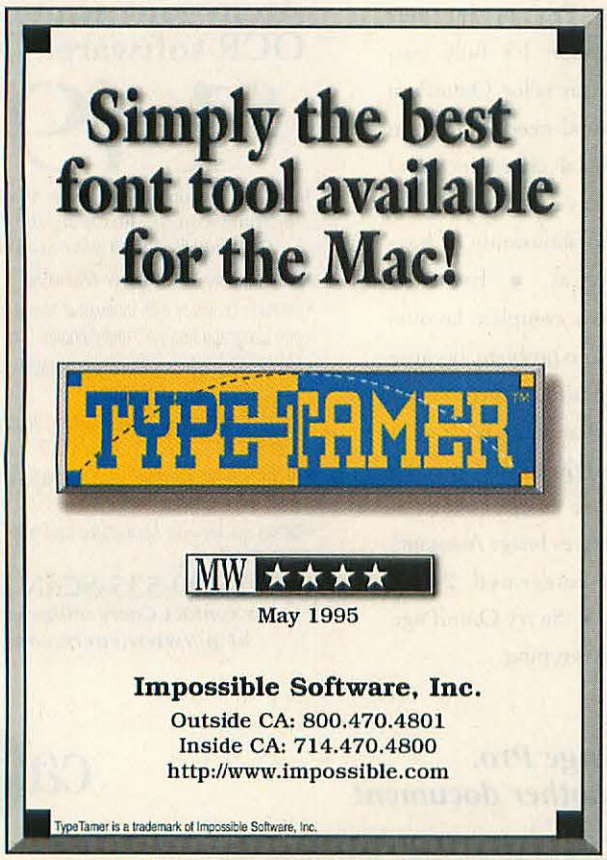
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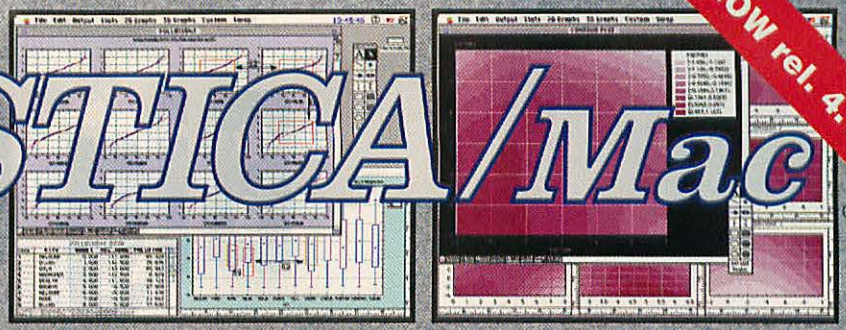
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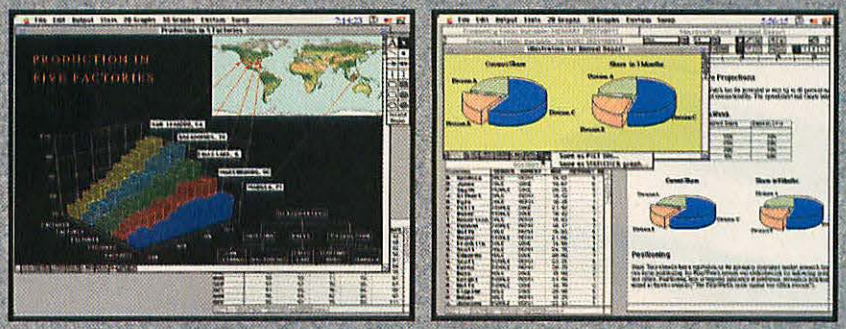
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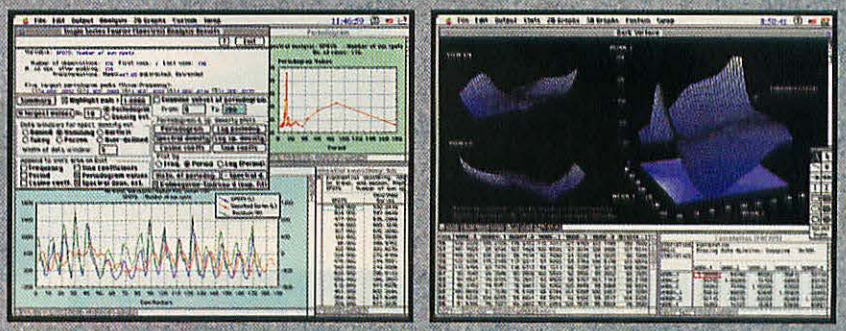
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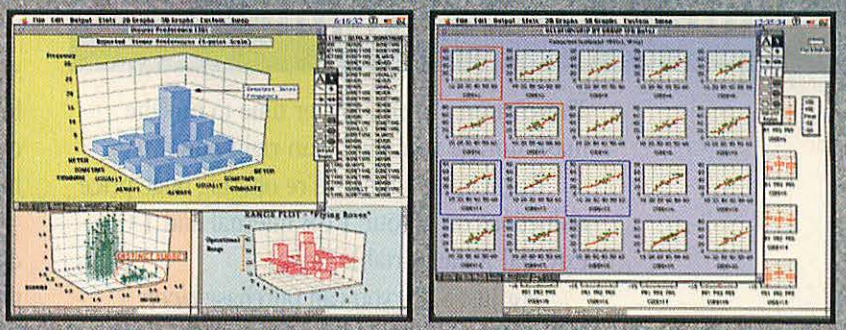
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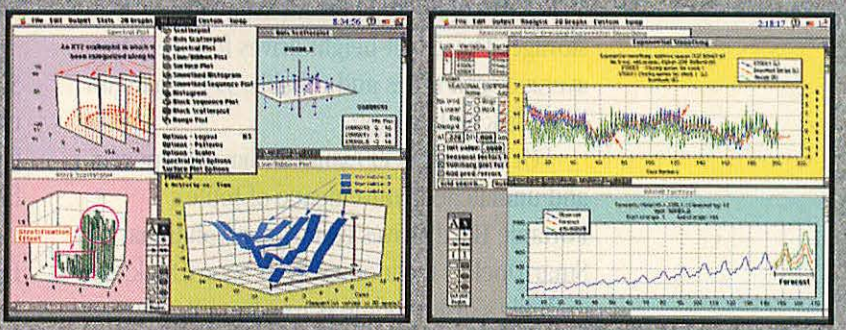
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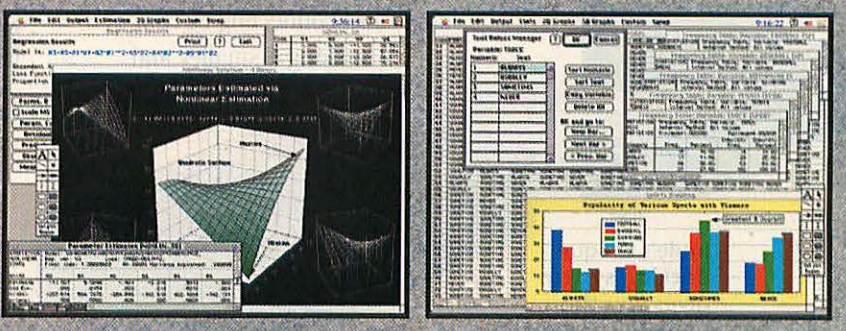












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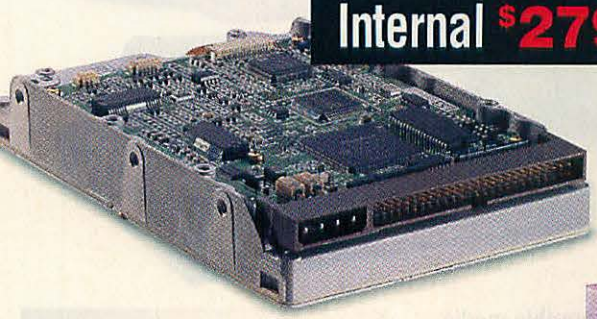


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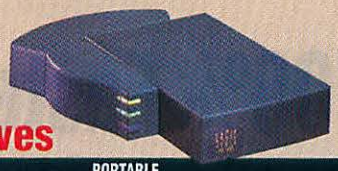


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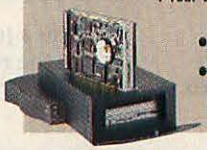
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BY ADRIAN MELLO

# The Lion and the Mouse

*Can a small company help save Apple?*

ONE OF AESOP'S FABLES TELLS of an angry lion who was about to kill a mouse for accidentally awakening him from sleep. The mouse pleaded with the lion, promising that if the lion spared his life, he would one day repay the kindness. Laughing at the preposterous notion that a mouse could ever help, the lion nevertheless set the mouse free. Shortly thereafter some hunters captured the lion and bound him with strong ropes. The mouse rediscovered the lion and, true to his word, set him free by gnawing through the ropes. Aesop's moral: Even the mighty may someday need the help of the small.

A version of this story is being played out today in the Mac market. Apple is irritated at the audacity of a small Swiss company called Quix, which is now in a position to help Apple. Quix figured out how to make the Macintosh OS run on PReP-based systems (see *News*, *Macworld*, October 1995)—something Apple officials have repeatedly stated over the last year was so technically challenging as to not be worth the effort.

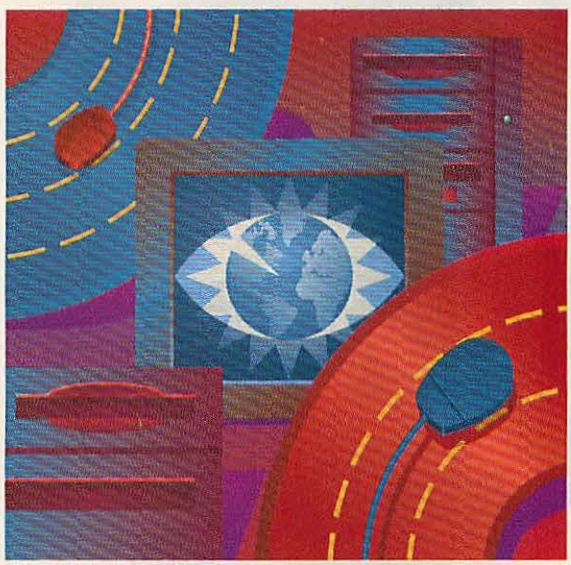
Apple should take Aesop's fable to heart. When you're in a serious pinch, it's not so bad to be proven wrong by a would-be rescuer. Apple currently faces blistering criticism for its inability to meet demand for Macs. By lending significant momentum to the Mac platform and helping Apple meet demand, Quix could be a huge boon to Apple at a time when it needs a bit of good fortune.

PReP-based Mac clones won't suffer from the supply problems currently hobbling Mac sales because the clones don't rely on the same custom chips. These clones could be manufactured very quickly by a number of companies with little cost to Apple. Chief among these potential manufacturers is IBM. Getting IBM to ship computers with the Mac OS would give a much needed boost to both the Mac and Apple's credibility, encouraging other computer makers to offer Macintosh clones and develop new products for the Mac.

## So What's the Problem?

So why doesn't Apple move forward with Quix? Apple won't comment officially, but from internal documents and conversations *Macworld* editors have had with company reps, opposition is based on a few misapprehensions about Quix.

Foremost is the belief that Quix will not support such Mac technologies as ADB and LocalTalk. First of all, these technologies are not crucial to the Macintosh architecture at this point, and they're certainly not important to the customers most likely to buy PReP computers. In any case, Quix is very near to providing the architectural support for these technologies. If manufacturers really want to offer built-in or add-on ADB and LocalTalk capabilities, they will be able to under Quix.



## Brain Drain

There is another fear: that Apple would have to provide a lot of engineering support to PReP computer makers, resulting in a kind of internal brain drain that would divert resources from Apple's Copland development, delaying its introduction. It ain't necessarily so. PReP is an existing standard that computer makers already understand. The problems it poses aren't comparable to the ones Apple currently faces in supporting existing clones because PReP does not rely on the Macintosh hardware architecture.

Quix really needs little more than Apple's blessing. The little mouse clearly doesn't need any technical support from Apple. It has already produced the PReP version of the Mac OS in spite of Apple's resistance.

Maybe Apple's also afraid it would have to spend significant time performing quality-assurance testing on the Quix product. I don't know why Apple would need to take responsibility for a third-party product. Quix provides a set of toolbox extensions and toolbox revisions along with some boot code that permits System 7.5 to run on a PReP system. Quix could offer a stand-alone operating system that customers could combine with a regular, Apple version of System 7.5. As long as the relationship is clear, why not let Quix and its supporters offer this product?

An alternative solution would be to let Quix offer a modified version of System 7.5. This would achieve the same effect—letting the Mac OS run on PReP machines—but because the Quix version of System 7.5 would be preconfigured as a single product, users wouldn't need to install additional software.

If for some reason Apple still felt compelled to perform some quality-assurance testing, it would find the effort worthwhile. Macworld Lab has tested Quix on several different machines. Even the early version posed no problems that suggested the system was anything but solid. Surely a small team of Apple engineers could accomplish the desired testing in a few months. Admittedly, given the dearth of available Mac system software engineers, this could delay Copland a month or two, but Copland is running at least six months behind schedule and probably more. Another month or so wouldn't make much difference. If the result were an IBM licensing

*continues*

DON ARDAY

agreement and a way to reward loyal Apple customers who can't buy Power Macs because of Apple's supply problems, the trade-off would be worth it.

### Danger to CHRP

Apple seems to be afraid that supporting PReP might undermine third-party commitment to the Common Hardware Reference Platform (CHRP). A little background is in order here. About two years ago IBM introduced the PReP specification to provide an industry standard for computers built around the then new PowerPC processor. IBM and Apple discussed the possibility of Apple's building PReP computers, but Apple decided not to because PReP didn't support the Mac's memory-management scheme and other Mac-specific technologies. The companies kept talking and agreed to CHRP, which is essentially a PReP varietal that can support the technologies in question.

On the surface, it seems sensible to avoid creating two competing standards, but that isn't necessarily the case. Apple could decide to sanction a version of Quix that supported only System 7.5. Then when Copland comes out, it would run only on CHRP-based machines. People who buy PReP systems and then can't upgrade to Copland would be in the same boat as owners of 680X0 Macs, who won't be able to run Copland either.

If IBM or other computer makers want to offer PReP systems that aren't Copland-capable—and they do—that's their business. Apple must learn to coexist with partners like IBM instead of assuming it has some right to manage its partners' business (an ironic attitude, considering Apple's difficulties managing its own business).

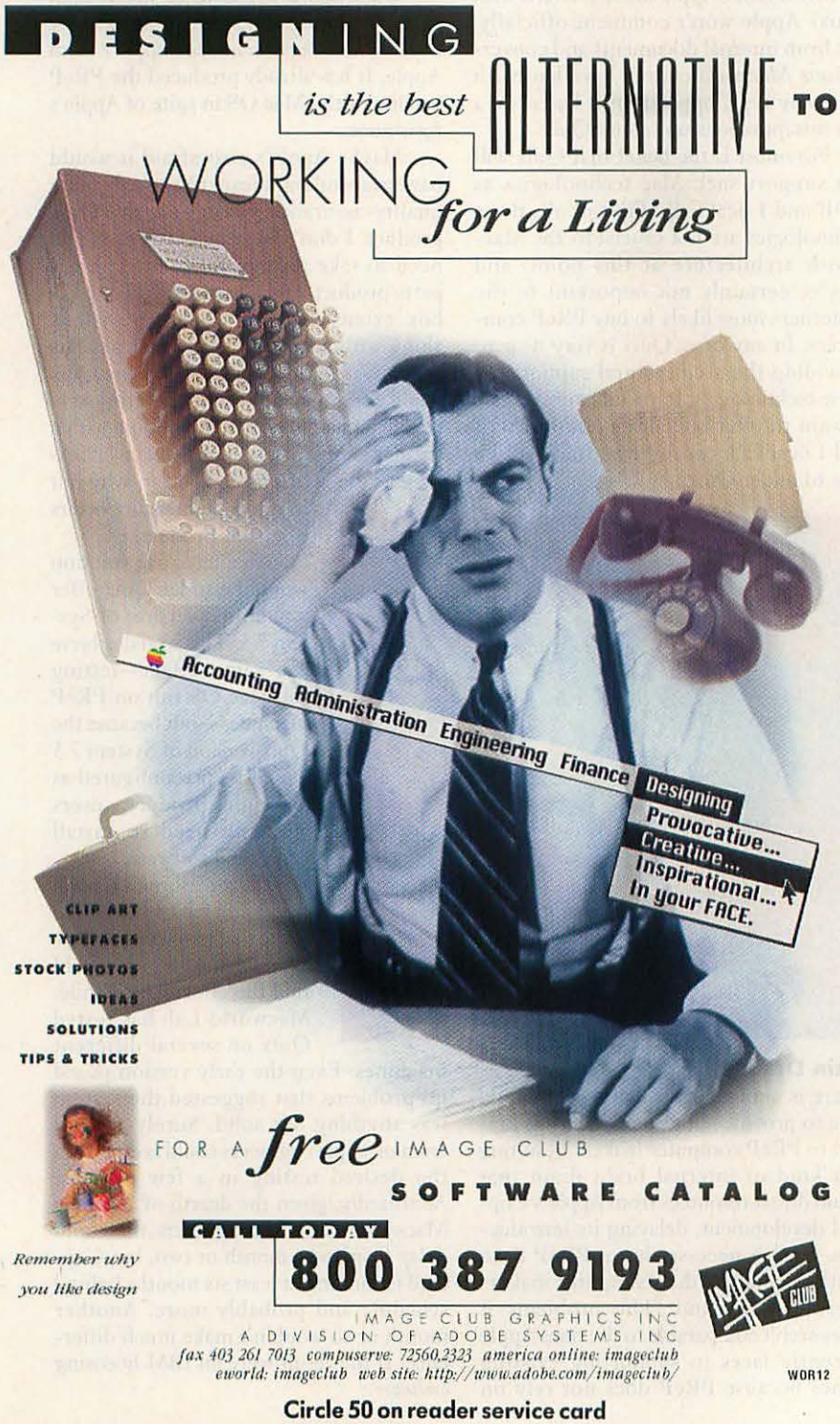
### Building Momentum

The fact is, by letting Quix run the Mac OS on PReP Apple would strengthen the Mac's position for migration to CHRP. Once IBM and other companies invest in marketing the Mac OS on PReP, it will naturally follow that they'll try to satisfy customers who want to migrate with Copland to CHRP. IBM needs a mainstream operating system like the Mac to sell its PowerPC systems. That is a golden opportunity for Apple. IBM doesn't have a PReP version of OS/2 ready (a dubious achievement even if it did). Furthermore, IBM would be able to sell the Mac OS into corporations, which is no threat to Apple considering the company's less than stellar performance in the corporate market.

Apple also runs a grave risk by rejecting PReP as it holds out for CHRP: it could be overtaken by a formidable competitor. By the time we see the Mac OS running on CHRP-based machines, Microsoft will have given Windows NT—which will also run on CHRP—a Windows 95 interface. By going with Quix now, Apple would get a head start with the very buyers who might be most attracted to Windows NT on CHRP.

Apple's reluctance to embrace Quix simply doesn't make sense, except as an example of Apple's failure to commit to a serious Mac OS–licensing effort. Apple may just be afraid to compete with big-time computer makers for Mac customers. It's time for Apple to turn to its little ally, Quix. It would be a real shame if Apple's leonine pride stood in the way. ■

Note: Visit Macworld Online (**http://www.macworld.com**) for a preview of our January special report on the Macintosh parts shortage, its effects on Apple and Mac clone makers, and why Apple's own engineers agree that Quix offers a solution to these problems.


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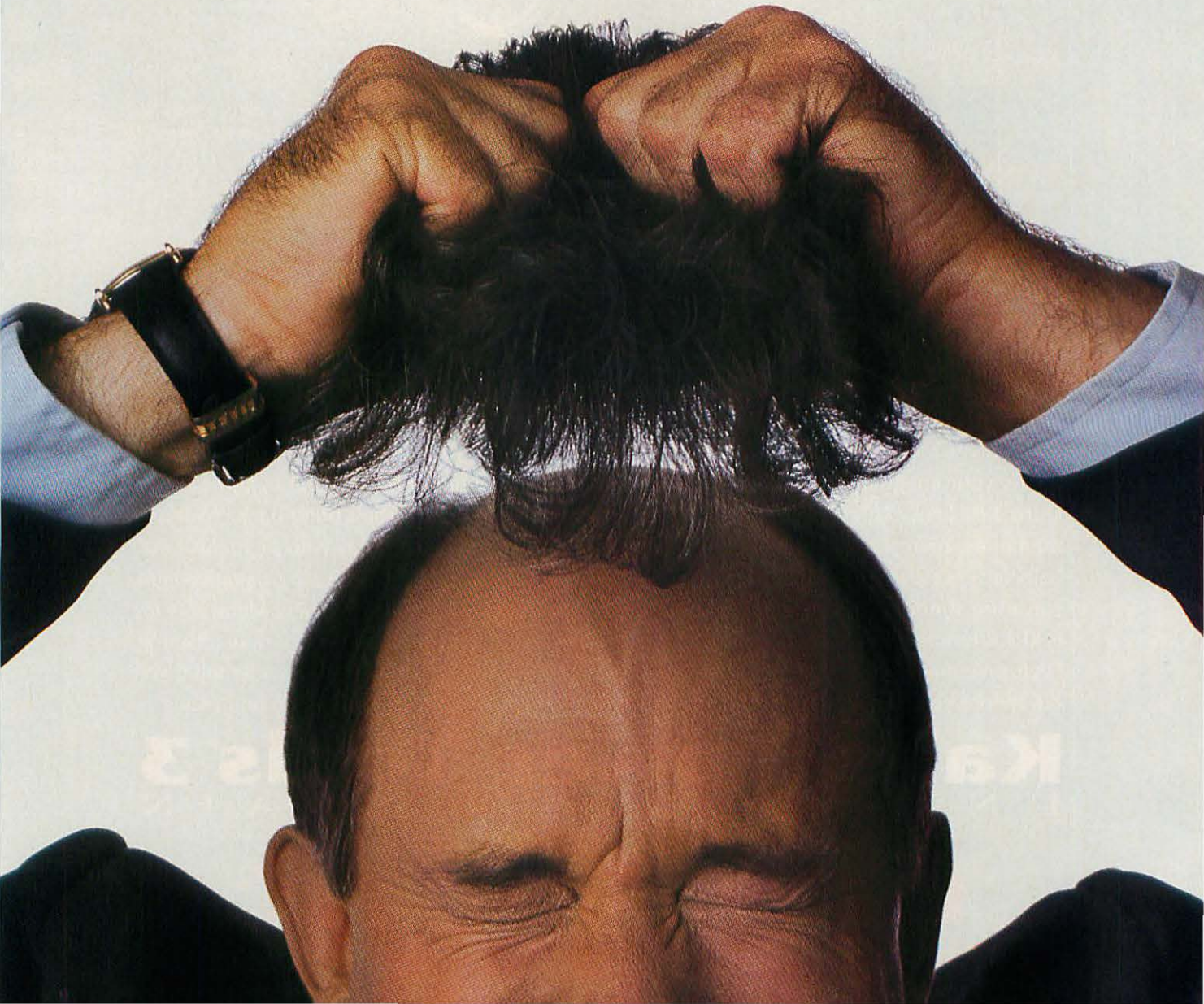
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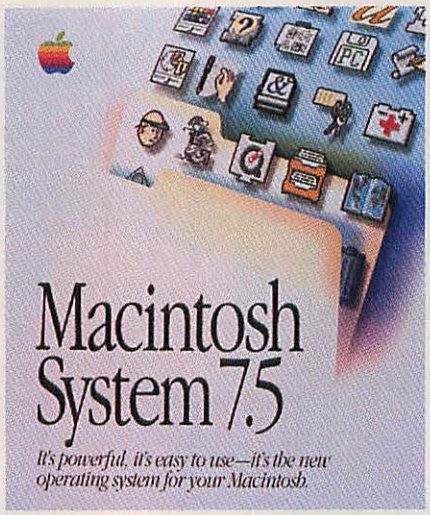
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# The meeting's in an hour, the charts are in Windows, and you can't find the sticky with the client's address.

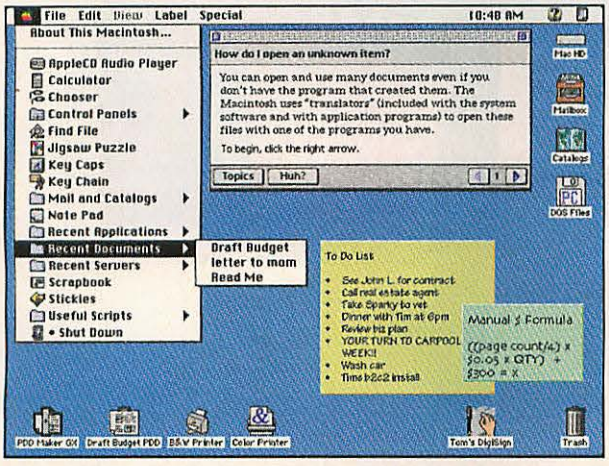


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Integrating other people's work into yours is a snap with System 7.5. No matter what application or personal computer they used, System 7.5 treats their files just like Macintosh files. And System 7.5 comes with a free copy of MacLinkPlus translators to make it easier than ever to share material with others.

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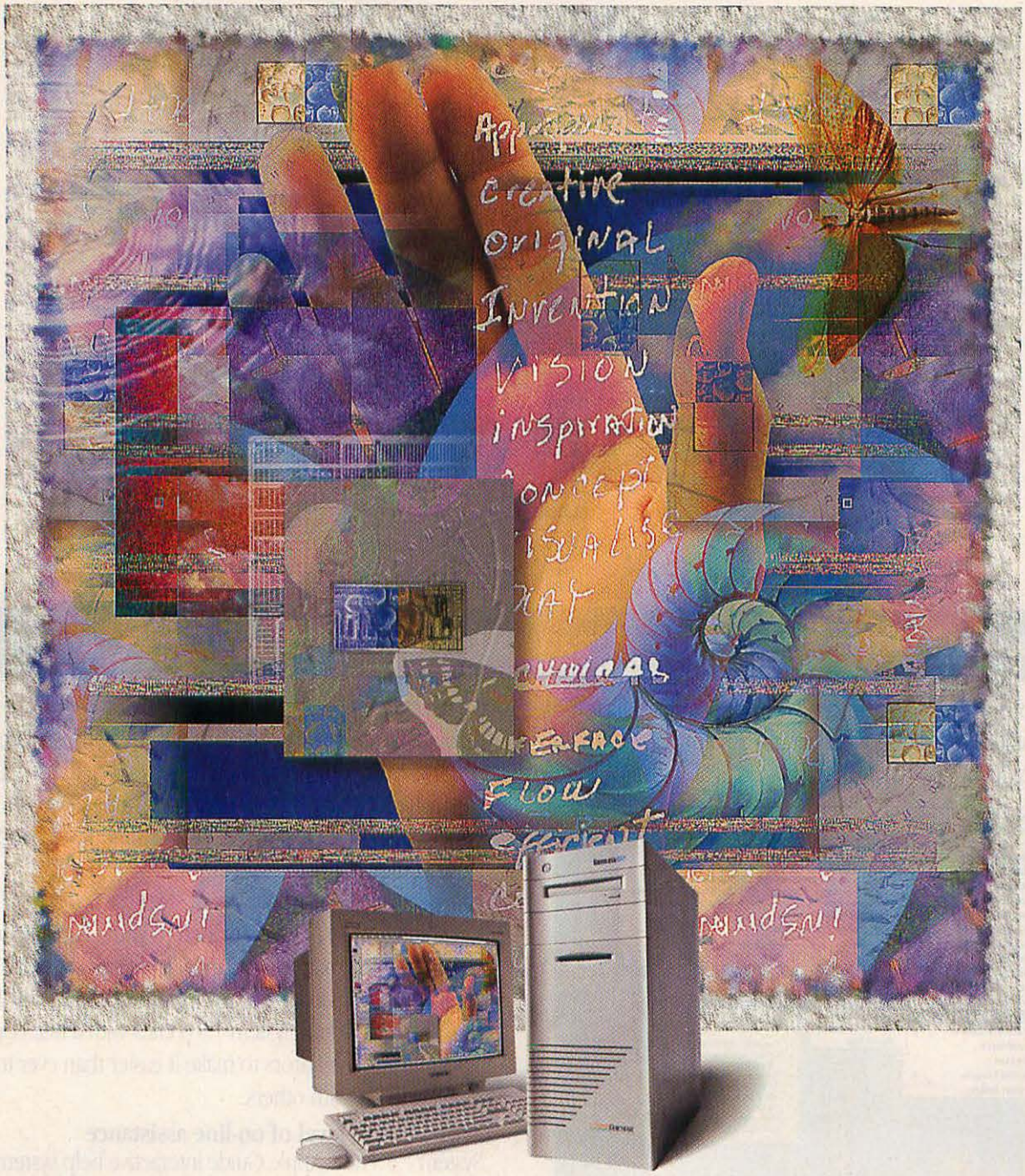
System 7.5's new Apple Guide interactive help system is like having a computer expert right *inside* your Macintosh. It walks you through functions step by step, pointing out exactly what to do next. That way you learn the fastest way possible: by 'doing', not just reading instructions.

Of course the best time to upgrade to System 7.5 is *before* the next crisis hits your desk. So order today by calling **1-800-950-5382 ext. 785**. Or call **1-800-538-9696 ext. 250** for the Apple reseller nearest you.

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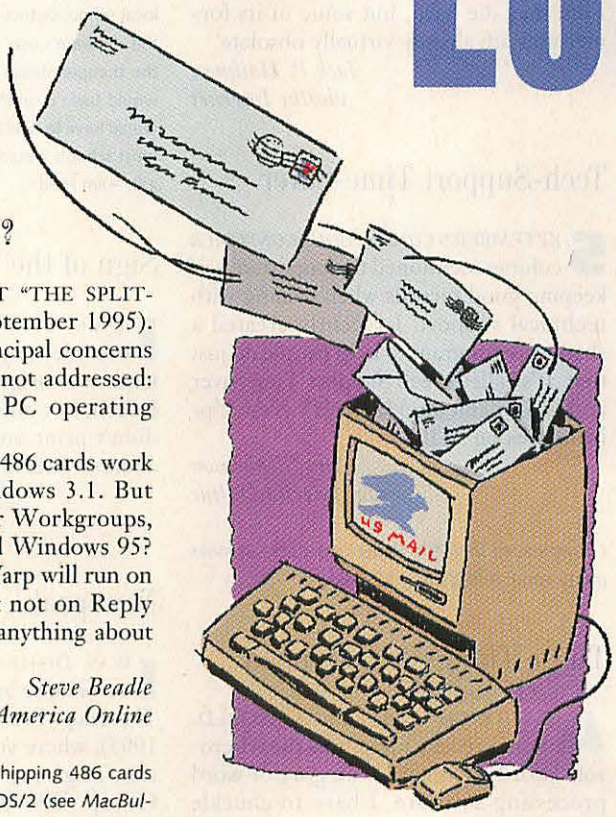
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# Letters




## Who Does Windows?

I READ WITH INTEREST "THE SPLIT-Personality Mac" (September 1995). However, one of my principal concerns regarding 486 cards was not addressed: Do they work with all PC operating systems?

I'm sure that the Mac 486 cards work with MS-DOS and Windows 3.1. But what about Windows for Workgroups, OS/2, Windows NT, and Windows 95? I have heard that OS/2 Warp will run on Orange Micro cards but not on Reply cards. I have yet to hear anything about the others.

*Steve Beadle*
*via America Online*

Orange Micro recently began shipping 486 cards that run either Windows 95 or OS/2 (see *MacBulletin* in this issue). Windows 95 should work on all of the 486 cards, but it'll be even slower on SoftWindows than Windows 3.1 is. Also, Windows for Workgroups 3.11 *is* Windows 3.1, so it will work fine. In fact, both Orange Micro and Reply sell Windows for Workgroups as their standard Windows. We did our testing under Windows for Workgroups, as Windows 95 wasn't shipping when testing occurred.—Galen Gruman

SURPRISINGLY, "THE SPLIT PERSONality Mac" failed to mention the best solution for Macintosh users who need to run Windows: take the $1375 to $2000-plus needed to equip your Mac with a PC card, and buy a fully equipped Windows PC. For $1700 or less you can get a Pentium-90 with 8MB of RAM, an 810MB hard disk, a 15-inch monitor, and a good 1024 by 768 video card. Comparably equipped DX machines are well below $1500. Unless you value your desk space at more than $500 per square foot, this approach will give you far more for your money, and it is the reason why these cards never have and never will catch on.

*Don McClelland*
*via the Internet*

HELLO! I DON'T KNOW IF YOU EVER got my first E-mail message—my Internet server got struck by lightning and I'm not sure if the E-mail is working yet—but anyhow, I read your September article about "The Split-Personality Mac." I read the entire article several times. It's exactly what I have been looking for. Everyone I deal with has either an IBM or IBM clone, and I am looking for a bridge for my Macintosh. I'm no computer expert, but your article was very clear. Keep up the terrific work in your magazine. There's none better!

*Travis Turner*
*via the Internet after all*

## But How to Test It?

I LIVE ON THE EAST COAST AND HAVE had two Global Village modems blow out due to the plentiful thunderstorms. I want to get a new modem, but have had to rely fully on word of mouth to find one that will stand up well to thunderstorms. I know that the only foolproof way to prevent this from happening is to unhook the modem, but sometimes thunderstorms come unexpectedly in the middle of the night.

*Jane Colwill*
*via America Online*

We're sensing a theme here.

Unplugging your modem (and other electronics) is the only way we know to prevent lightning strikes from frying your equipment. Anyone with another solution—or suggestions on how *Macworld* can test for lightning resistibility—can drop us a line at 501 Second St., San Francisco, CA 94107, or via E-mail to **letters@macworld.com**.—Ed.

## You Want It, You Got It

*MACWORLD* HAS LONG BEEN PROviding the Macintosh community with valuable information. Unfortunately, international readers have a hard—read, expensive—time reaching American companies. It would be very helpful for international readers if, in addition to American phone numbers, you could also mention a fax number or, even better, an E-mail address. Thanks a lot, and continue the good work.

*Andreas Beier*
*via the Internet*

We think E-mail addresses are a good idea, too; you'll notice more and more E-mail addresses in *Macworld* as companies jump on the Internet bandwagon.—Ed.

## Filmless Mug Shots

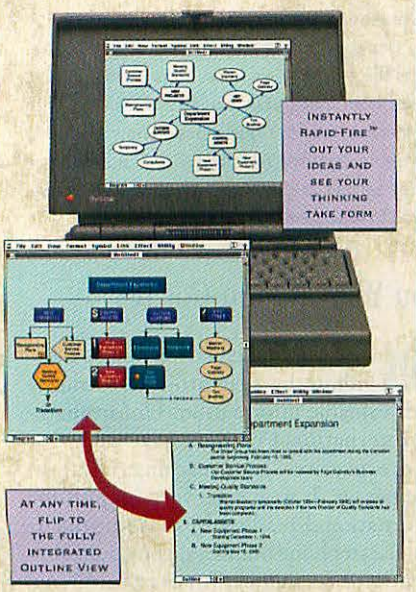
I AGREE WITH YOUR ARTICLE "FILMLESS Wonders" that film photography is showing signs of morbidity (September 1995). I use the Connectix QuickCam for simple snapshots of the students in my courses. This gadget is not in the league of the real-time cameras reviewed in the article, but its $99 price tag is incredibly attractive. I paste my students' pictures

*continues*

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into a draw program and write their names across the bottom of the image, which is something not easily done with conventional photographs, and then print out a rogues' gallery to have before me during class. Such uses directly replace conventional photography such as Polaroid portraits, and at virtually no cost. Film may die hard, but some of its former uses are already virtually obsolete.

*Jack P. Hailman*
*via the Internet*

## Tech-Support Time-Saver

SEPTEMBER'S *CONSPICUOUS CONSUMER* column mentioned the importance of keeping good records when dealing with technical support. I recently created a shareware program to help people do just that. It's called Tech Support TimeSaver and is available in *Macworld*'s New Uploads area on AOL.

*Jim Stephenson*
*via America Online*

I downloaded this little HyperCard stack—it looks pretty good. And it's only $5.—Ed.

## These Things Just Happen

ALTHOUGH I APPLAUD WORLDSoft's recent foray into the Microsoft Word–dominated category of word processing software, I have to chuckle at the company's advertisement in the September 1995 issue. From looking at the ad copy, one must think this new wordsmithing application has no spelling checker. Why? In bold type, no less, WorldSoft misspelled the name of its new program.

*John Perkins*
*via CompuServe*

Hey, it happens to the best of us.—Ed.

## Recycling Pays Off

JIM HEID'S *WORKING SMART* COLUMN in the September issue, "Environmentally Friendly Computing," was very good as well as informative. However, recycling your old software (or hardware) by giving it to schools or teachers may not be the best policy. Teachers and schools are already burdened with outdated software and hardware that is virtually unusable. Donated software would just take up space on the shelf. At the very least, make sure first that it can and will be used. Better yet, why not try to pull together programs to keep our schools updated and our teachers trained to use the technology, and to educate administrators to the need to plan appropriately in this rapidly changing area?

*R. Whiteaker*
*via CompuServe*

I frequently donate older software packages to my local school district when I can (within the terms of the software's user agreement). Everybody wins. As the bumper sticker says, in an ideal world, schools would have everything they need and the air force would have to hold bake sales. In the meantime, I bet most schools would appreciate all the help they can get.—Jim Heid

## Sign of the Times

IT JUST STRUCK ME AS AMUSING THAT every letter you ran in your September issue was originally sent to you via the Internet or another online service—you didn't print one letter with a snail-mail address. I see this as a sign of the times.

*Mike Wallinga*
*via eWorld*

## Newspeak

I WAS DISHEARTENED TO SEE *Macworld* lapse into Newspeak in "Internet 'Decency' Promoted" (*News*, September 1995), where you state that the Information Highway Parental Empowerment Group (IHPEG) aims to "let" parents police what their children access and to "let" providers rate their materials. The efforts of the IHPEG may assist in these activities, but it can hardly be said to *allow* something that can already be done. It is via this same use of Newspeak that politicians claim that they will *let* parents police their children's access to violence by forcing television manufacturers to include (and us to pay for) a V-Chip in all new TV sets. In fact, parents can accomplish this goal by employing already-standard features: the channel selector or, better yet, the power button.

*Carl F. Hostetter*
*via the Internet*

## Inquiring Minds

THE POWER MAC'S SCIENTIFIC REVElation" (September 1995) failed to address a crucial issue when discussing the scientific prowess of the Power Macs. Many of us scientists write our own programs. How fast is a Power Mac when it comes to running my FORTRAN-compiled code? This question must be

*continues*

# Put a fork in it.

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answered if I am to consider a Power Mac next time I raise money to upgrade my Unix workstation.

*Jose Menendez*
*via the Internet*

We were unable to get a native Power Mac copy of Language Systems' FORTRAN in time for this article (we originally planned to include FORTRAN and C benchmarks). It's shipping now, and *Macworld* should have a review in a few months. The good news in advance is that recompiled programs are amazingly fast, four to ten times faster on a 7100 than on a Quadra 800.—Ed.

## You Forgot Hairs and Parsecs

DON'T DISMISS THE NEW LOOK," SAYS *Macworld* of Copland ("The Mac's Jazzy New Face," July 1995). Why not?

It's not just the rush to turn everything into garish simulated 3-D—hardly limited to the Mac, of course. It's the Assistants and Apple Guide—what is that button labeled Huh? (in "The Mac OS Unveiled, " same issue). Say "huh" if you absolutely must in the privacy of your own homes, but please don't force more American cultural terrorism on the rest of the world.

It's bad enough that we have to put up with your dots per inch, picas, points, ciceros, nails, ens, ems, ells, letter size, legal size, tabloid size, microns, angstroms, inches, fingers, hands, feet, yards, furlongs, poles, fathoms, links, chains, acres, perches, roods, light-years, astronomical units, miles—there's even a *nautical* mile!—as well as your pints, quarts, barrels, hogsheads, firkins, pottles, bottles, half bottles, tots, shots, fifths, magnums, carafes, jeroboams, minims, gills, nebuchadnezzars, methuselahs, pecks, bushels, quarters, sacks. And even your very own gallon, different in size from that other one.

Carats, grains, drams, ounces, pounds, stones, hundredweights, long tons, short tons, bars, tors, atmospheres, pounds per square inch, horsepower, cycles, Fahrenheits, BTU's, even the inane and flawed pounds of thrust and g's. Even when Americans do use a metric unit, they get it wrong. I mean, who thought up the absurd kilowatt-hour?

Look, I'm not trying to be unkind. I love America. And I love the Mac, honest. I just want what's best for it, you, and me. So please, Apple, don't force us to become Americans. Go back to the drawing board and make Copland as good as it can be. As good as it deserves to be. As good as the Mac.

*Glenn Holland*
*Auckland, New Zealand*

Is there something you want to tell us about *shillings* and *new pence*, Glenn?—Ed.

## Stand By Your Mag

I SINCERELY APPRECIATE THE FACT that you do not accept sexually explicit advertisements in your magazine. This is the number one reason I purchase *Macworld*—besides the excellent articles, of course. It is refreshing to see that you forgo this obviously lucrative source of revenue—I know you do this at a cost. Let me tell you, there are others like me who appreciate not having to censor our magazines before leaving them around the house.

For the past year I have purchased your magazine on the newsstand. However, as soon as I purchase my new 6200 at the end of this month, I plan on subscribing to *Macworld*. Thank you, and keep up the good work.

*Kurt Schachner*
*via the Internet*

## Now That's PR

I THINK IT WOULD BE A FABULOUS IDEA if Apple hired Sandra Bullock, who is a Macintosh user in real life, as its spokeswoman in a counteroffensive against the Windows 95 blitzkrieg! Apple could increase its name recognition in the public tremendously by being associated with this charming, beautiful, and versatile actress, in the same way that Candice Bergen and Jerry Seinfeld have done for Sprint and American Express. Bullock's face certainly would be an outstanding improvement over the current two-faced Mac OS logo. She certainly could do for Apple what she has done for mass transit, following her appearance in *Speed* and *While You Were Sleeping*—and now in *The Net*, she also demonstrates her expertise with Power Macs and PowerBooks. C'mon, Apple, give it a go and blast Windows 95 out of the water!

*Richard R. Tamesis*
*via America Online*

Letters should be sent to *Letters, Macworld*, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically to CompuServe (70370,702), MCI Mail (294-8078), America Online (Macworld), eWorld (Macworld), AppleLink (Macworld1), or via the Internet (**letters@macworld.com**). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*. m

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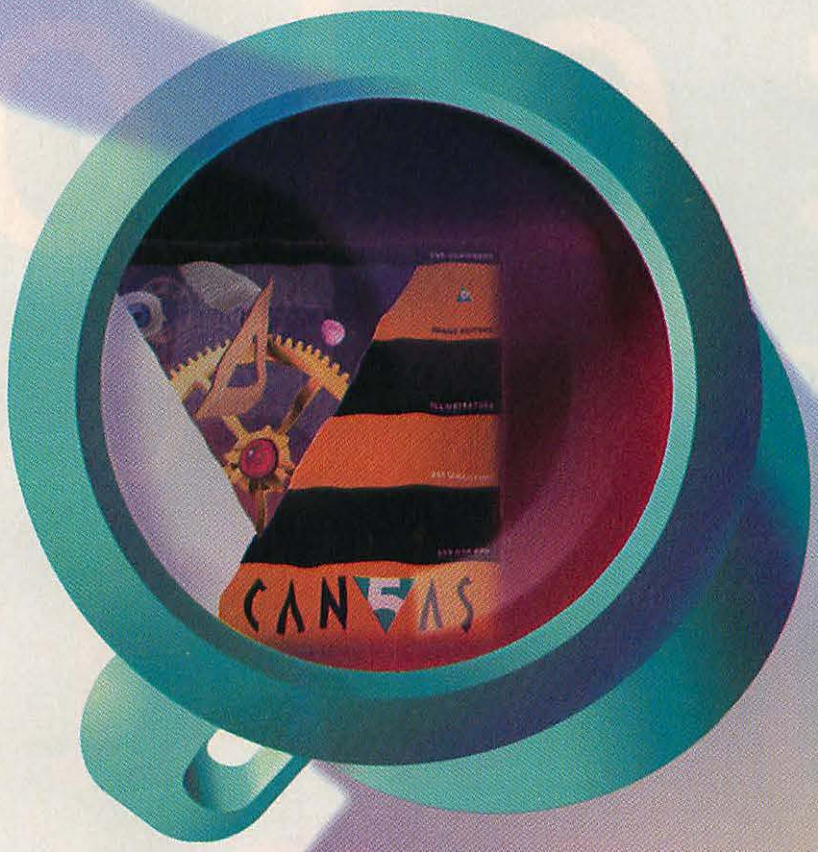
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LATE-BREAKING NEWS

# MacBulletin

**Clone Moves** LG Electronics, a division of the LG Group, a South Korean conglomerate best known for its GoldStar brand, is negotiating a Mac OS license with Apple and hopes to have an agreement by the time you read this. Apple declines to comment. LG also plans to license Power Computing's hardware design for Mac clones. LG plans to sell its systems in South Korea, whose tiny Mac market it hopes to expand greatly.

DayStar Digital (404/967-2077, **genesismp@daystar.com**) has delayed the planned September introduction of its Genesis MP multiprocessor Mac clones because of engineering difficulties. DayStar says it will ship units in October, although as of early October it could not provide a working prototype.

Meanwhile, Power Computing (512/526-0500, **info@powercc.com**) now offers its systems in Computer City stores in an exclusive arrangement for retail sales. It also has an exclusive arrangement with MacMall for catalog sales. Power Computing also sells direct.

**Chip Flaw Bedevils Performas** About 500 of the 500,000 Performa 5200 (including the identical Power Macintosh 5200 LC) and 6200 computers manufactured between March and August 1995 have defective PowerPC 603 CPUs, says Bruce Gee, Apple's product-line manager for entry-level systems.

Apple has written a diagnostic utility to reveal the flaw. Performa owners can download it from Apple's forums on CompuServe, eWorld, or the Internet, or call 800/785-7371 for a disk. For affected customers, Apple will send a technician out to replace the motherboard at no charge (the 603 CPU is soldered to the board).

**Consolidation on the Web** Continuing its expansion into all things publishing, Adobe Systems has acquired Ceneca Systems, a small company whose new PageMill and SiteMill Web-page-creation and server-management software generated a lot of excitement even before it shipped this fall (see "A Preview of Ceneca's Hot Web Tools," *News*, November 1995).

Meanwhile, Netscape Communications will acquire Collabra Software. Netscape is known for its Navigator Web browser and Collabra for its collaborative-computing software.

**Web-Friendly Painter** Fractal Design (408/688-5300) has announced a major upgrade to its natural-media paint program that provides stronger Web-graphics capabilities, the ability to collaborate on artwork over the Internet or any TCP/IP LAN, and the ability to combine vector art created in illustration programs with bitmapped graphics. Other new features include painting with tiles, improved color correction, and mask editing. The $549 Painter 4 is expected to ship in November 1995 for both Mac and Power Mac.

**Windows 95 for Macs** For NuBus-based Macs, Orange Micro (714/779-2772, **omisales@eworld.com**) now offers DOS coprocessor cards that run Windows 95 or OS/2. OrangePC Model 220 cards with 8MB of RAM and a 66MHz 486DX2 CPU cost $1127 with Windows 95 and $1187 with OS/2. Upgrades from the previous Windows 3.1–only OrangePC Model 220 and 290 cards cost $129 for Windows 95 and $209 for OS/2. PCI versions of the cards are planned for later this fall.

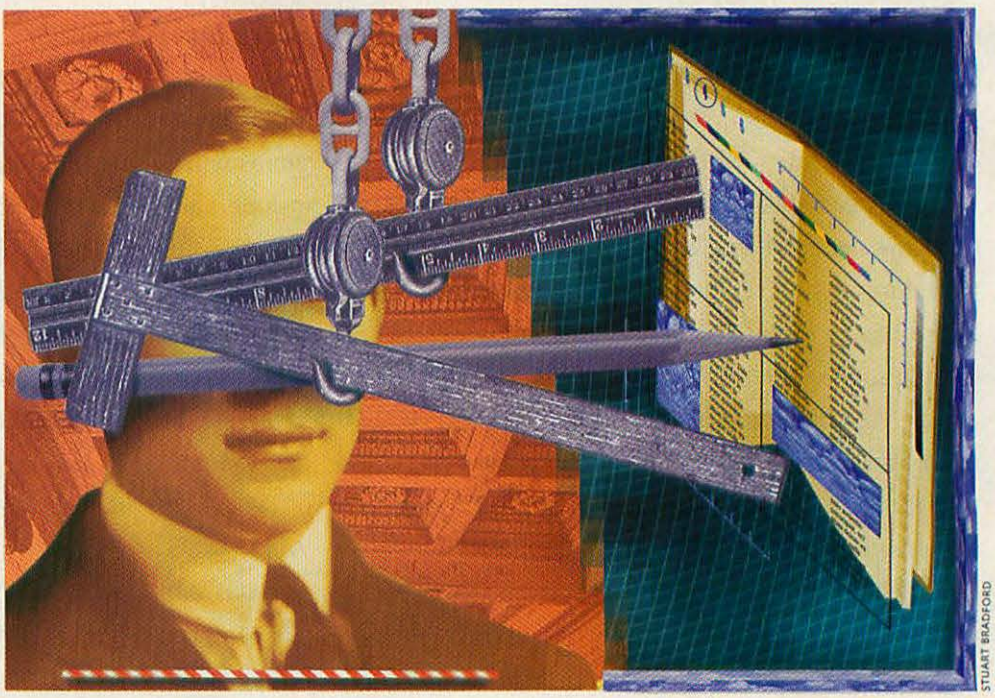
**Apple Boots Finance Chief** Apple's board of directors removed the company's chief financial officer, Joseph Graziano, in its October board meeting, and iterated its support for CEO Michael Spindler. Speculation had been that Spindler would leave. Both Spindler and Graziano have been criticized for not handling a parts shortage that has made Apple unable to meet customer demand. Graziano has also urged Apple's board to sell Apple, a move the board so far rejects. m

# News

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# Net Navigator Shatters Static Web Pages


STUART BRADFORD

How many two-year-olds do you know that are leading an industry around by the nose? With version 2.0 of its Navigator Web-browsing software, Netscape—which turns two in April 1996—is once again pushing the boundaries of the World Wide Web, offering site designers new ways to deliver in-line information and new tools with which to format Web pages.

### Live from Cyberspace

While previous HTML browsers require helper applications to handle data that's more complex than text or an image or two, users of Navigator 2.0 will interact with what Netscape calls Live Objects: in-line viewers and Java applets. In-line viewers are small applications that third-party developers write to Netscape's API. These viewers reside in folders on a user's hard drive and load dynamically to display multimedia content within the Navigator 2.0 window. Since the viewers load within Navigator, not as individual applications, several viewers can execute simultaneously, thanks to Navigator's use of the Thread Manager in the Mac OS. Depending on the whim of the page designer, a viewer can appear in a number of window types and sizes, with or without extra controls to manipulate the data stream. In-line viewers that should be available at the final release of Navigator 2.0 include those for QuickTime/QTVR movies, Adobe Acrobat documents, Macromedia Director files, and RealAudio files. Navigator 2.0 will also run Java applets—mini applications written in Sun Microsystems' Java Programming Language and then embedded in Web pages.

"Enhanced for Netscape Navigator 1.1," a common road sign on the Web, signifies a page built with nonstandard HTML tags—tags designed by Netscape and supported only by Netscape's browsers. Version 2.0 of Navigator will introduce a new set of page-layout tags that designers can use to divide pages up into multiple, independent regions called frames and ledges. Frames are panels within the Navigator window; each frame displays a separate URL, with designer-optional scroll bars. By creating a ledge, the designer freezes a region of the Navigator window but allows users to scroll through the rest of the page. A ledge is similar

to a frame, except that it lacks scroll bars and is intended to be a static area containing controls or graphics that the designer wishes to have constantly available. If they are adopted by Web-site builders, both of these tools promise major changes in both the appearance of Web pages and the way sites are constructed. Designers will be able to lay out pages that contain discrete regions right from Navigator, rather than relying on tricks and hacks to get around HTML, which still handles text much the way a word processor does: from the top down, with the occasional nod to justification or indentation.

Rounding out the new tools available to site developers, Navigator 2.0 also features an object-oriented scripting language. Scripts can be placed within HTML documents and can, for instance, perform actions when a page opens or closes, adjust the way a page looks, validate the contents of fields before a user submits a form, and control embedded Java applets.

Beyond strictly Web-centric improvements, Netscape is touting Navigator 2.0 as the only Internet client you'll ever need. The E-mail and news readers have been completely overhauled and given multipaned interfaces. Users can build HTML E-mail messages, complete with embedded, in-line images; and Navigator 2.0 will support the MIME multimedia extensions for E-mail and news messages. Initially, users won't be able to set up rules-based filters (these are expected in a later version), but users will be able to encrypt and digitally sign Navigator 2.0 E-mail, using Netscape's SSL security technology.

### More Than Just Browsers

Several companies have produced tools for HTML editing and page creation, from word processor add-ons to dedicated programs. Netscape will join their ranks this year with Navigator Gold, which adds WYSIWYG content-creation tools to the Navigator 2.0 browsing features. Users will be able to see what their page looks like as they create it and will have access to all Netscape features and extensions, from backgrounds, tables, and forms to frames, ledges, and live objects. Netscape expects the public beta of Navigator Gold to be available in late October, with the shipping version appearing in December for roughly $79.

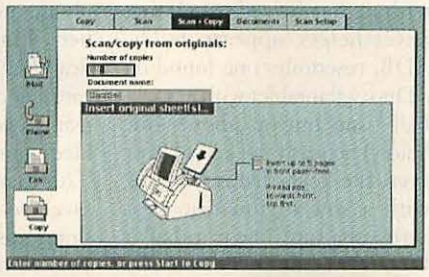
Netscape intends to have all of these products appear for the Mac OS and Windows 95 simultaneously, but there are other projects in the works that won't appear on the Mac for six months, if ever. Along with Navigator 2.0 and Gold, Netscape has announced a package of Web-site management and content-development tools titled LiveWire. But since there is currently no Mac OS Netscape server (and no plans for one), Mac site managers shouldn't hold their breath waiting for LiveWire. Slightly closer to reality are two applications Netscape announced earlier this year, for Windows 95: SmartMarks (a bookmark collection and organization tool) and Chat (offering real-time communication over IRC or Netscape Community System). Neither of these applications is expected to be ported to the Mac OS until late in the spring of 1996, although Macintosh users shouldn't despair completely, as Netscape has dramatically improved bookmark handling in Navigator 2.0.

The new functions of Netscape Navigator 2.0 are a gauntlet thrown in the face of nearly every company developing software for the Internet. This is particularly true of the new HTML tags used to implement frames and ledges. Netscape's new tags, Live Objects, and support for Java offer compelling benefits for both site designers and surfers. In the time-honored tradition of toddlers and young technology companies, Netscape has grabbed the ball and is running for the horizon—daring everyone else to either follow, or get left behind.—CAMERON CROTTY

# Apple's All-in-One Office Tool

**PROTOTYPE MERGES MAC, SCANNER, COPIER, PRINTER**

Ever since the original Macintosh, the all-in-one computer has been an Apple touchstone: witness the Color Classic, the Power Mac 5200/75 LC, and the company's continuing efforts in the Performa line. Recently, *Macworld* gained unauthorized access to another Apple all-in-one effort: a combination scanner/copier/printer/fax machine/answering machine/speakerphone/Macintosh.



Apple's prototype hydra puts common office functions in a Mac-like interface.

Similar all-in-one devices are known in the PC market as hydras (many-headed beasts), although they don't include a computer. Physically, Apple's platinum-colored hydra resembles what it's made from: a PowerBook Duo 230, a StyleWriter 1200, a roller-fed scanner, and a telephone. Like a StyleWriter, Apple's hydra has no paper tray; users drop documents to be scanned or blank sheets to be printed into two adjacent slots on top of the machine and retrieve the results from the bottom front.

### Everything but the Coffeemaker

Roughly the size of a Power Mac 7100, the prototype hydra *continues*

# In Brief

### Mirror, PLI Products Resurface

A new company called Technology Squared (612/832-5622) will sell products from Mirror Technologies; Peripheral Land, Inc. (PLI); and Mac USA. The company was formed through a merger of Mac USA and a holding company; MacUSA acquired Mirror Technologies last year and PLI earlier this year. The new company will sell storage products to the Macintosh and PC markets. Scanners and monitors will no longer be sold under the Mirror name.

### Doubled Printer Resolution

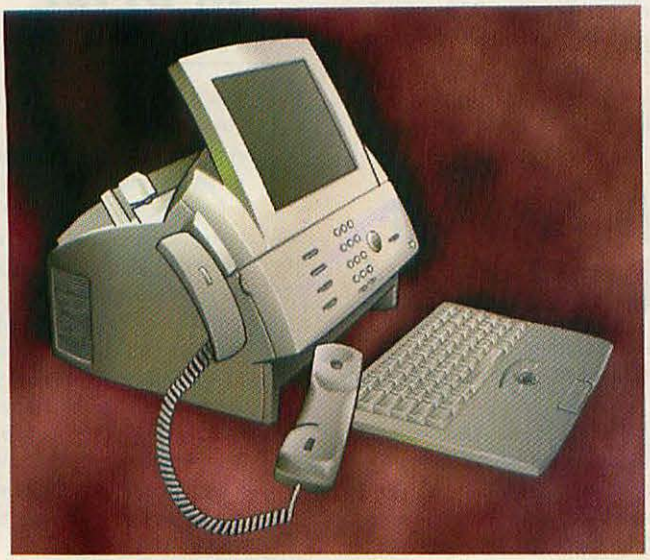
DP-Tek Development (316/687-3000; **info@dptek.com**) has introduced a family of new TrueRes chips that it claims can double the resolution of a printer's native engine to as much as 1200 by 1200 dpi. The TrueRes H25 electronically transforms any fixed-resolution laser or LED page printer into a software-controlled, multi-resolution device with doubled resolution and reduced toner consumption. So far, no one has announced products using the chips.

### Video Production on PCI

ImMix (916/272-9800) has introduced a workstation built around the PCI-based Power Mac 7200 for nonlinear online video production. The $33,500 VideoCube Lite allows real-time effects creation for video and audio, real-time mixing of four-channel CD-quality audio, and real-time character generation of antialiased titles.

### Name Games

HSC Software, the company best know for its Photoshop plug-ins and Live Picture image editor, has changed its name to MetaTools (805/566-6699; **hscsales@aol.com**). RasterOps, once a major Macintosh display company, has changed its name to Truevision (317/841-0332), a subsidiary company that develops video-editing hardware. RasterOps pulled out of the display market more than a year ago.



The prototype Mac hydra illustrated here combines a subnotebook Mac with several peripherals, including copier, scanner, fax, and answering machine.

is movable, but too heavy and awkward to be labeled portable. The overall style feels closer to that of the StyleWriter and LaserWriter than to the swooping lines of the PowerBook 500 series or the squared-off utilitarianism of the current PowerBooks.

A front panel roughly 6 inches wide has a numeric keypad; a directional control pad, similar to the thumb pad found on many video-game controllers; and several buttons tied directly to the control software. From the front panel, users can switch between the hydra's various functions (mail, phone, fax, and copy), start and stop processes, switch from handset to speakerphone, control the speaker volume, toggle between business appliance and computer mode, or put the machine to sleep and wake it up.

Above the control panel, the machine boasts a 9.1-inch passive matrix LCD screen that displays 16 levels of gray at 640-by-480-pixel resolution (the same as the Duo 230). The screen is mounted on a base hinge that lets it pivot through roughly a 20-degree arc. Beneath the control panel, there's a slot from which scanned and printed documents emerge, and below that there's a space for the keyboard to reside when it's not in use.

The keyboard, attached with a hardwired cord that nevertheless appears to be ADB, resembles one found on a Duo: a flat tablet with a trackball (one button above, one below) beneath the keys. However, the keyboard is full-size, with a row of function keys across the top. The trackball is Duo-size, but there's no dip in the plastic surrounding the trackball.

A sculpted (and not very comfortable) telephone handset hangs off the left side of the machine, while the right-hand side sports a high-density 3.5-inch floppy drive mounted vertically. The rear of the unit I examined bore only an ADB port and a serial port.

### More than Just a Pretty Face

In appliance mode, Apple's hydra presents users with a single screen containing four function icons down the left side (directly corresponding to the four function buttons on the front control panel) and a changing array of option tabs across the top: Users choose from Mail, Phone, Fax, and Copy. The Mail function is a voice mailbox that displays a list of recorded messages. Users can record a custom greeting and even a custom ring—imagine being alerted to an incoming phone call by the opening notes of a Bach fugue! Both the Phone and Fax options offer access to an address book with names, phone numbers, and fax numbers. Finally, while using the Scan function, users can duplicate a document as if they were using a copy machine, save an electronic copy, or do both. The machine keeps a list of saved documents; if you have a floppy disk handy, you can save your own duplicates.

If the appliance software doesn't meet your needs, simply hit a switch, and up pops a standard Macintosh desktop. The machine we examined had 8MB of RAM and a hard drive. It operated in all respects like a Mac, running third-party software with aplomb, if a bit slowly—the venerable 33MHz 68030 CPU that powered the Duo 230 appears to be the engine of this prototype.

It's unclear what expectations Apple has for this machine, or even if the unit we examined is anything more than a proof-of-concept, a prototype, or an experiment. Rumors from within the company suggest that Apple envisions placing hydra units in hotels, either in business centers or directly in the rooms. This or other occasional-use, travel-based scenarios seem most likely, as the machine I saw was too limited to be a true home/office machine. The configuration of the device also suggests that Apple may be aiming it at international rather than U.S. markets. Like any company, Apple often runs development projects that never see the light of day.

—CAMERON CROTTY

### THE AMCOEX INDEX OF USED MACINTOSH PRICES

| Machine/RAM/Hard Drive | Average Sale Price | Monthly Change |
|---|---|---|
| PowerBook 140/4MB/40MB | $600 | $0 |
| PowerBook 165/4MB/80MB | $950 | –$50 |
| PowerBook 180/4MB/80MB | $1250 | –$25 |
| PowerBook Duo 230/4MB/80MB | $750 | +$50 |
| Mac IIsi/3MB/40MB | $275 | $0 |
| Mac IIci/4MB/80MB | $525 | –$25 |
| Mac IIfx/4MB/80MB | $450 | –$25 |
| Centris 650/8MB/230MB | $1025 | $0 |
| Quadra 800/8MB/230MB | $1050 | –$150 |
| Quadra 900/8MB/160MB | $1100 | –$25 |
| Power Mac 7100/66/8MB/350MB | $1750 | –$50 |
| Power Mac 8100AV/8MB/500MB/CD | $2600 | –$200 |

*Index provided by the American Computer Exchange of Atlanta (800/786-0717). It reflects sales during week of September 20. Configurations include keyboard and exclude monitor and display board for noncompact models.*

# Apple Recalls PowerBook 5300 Series

**FLAWED BATTERIES CAUSE OVERHEATING, DAMAGE**

Less than two weeks after Apple recalled PowerBook 5300–series models on September 14 because of a problem with the lithium ion (LiIon) batteries, the 5300s are again shipping, this time with nickel–metal-hydride (NiMH) batteries.

The recall occurred after two batteries at Apple's main campus had failed catastrophically; at least one battery caught fire. Apple says that about 1000 PowerBook 5300's had been shipped before the recall and that only about 100 were in the hands of customers when the recall occurred.

For the recalled notebooks, Apple replaced the LiIon batteries with nickel–metal-hydride (NiMH) batteries and installed a software extension that programs the

notebook to handle NiMH batteries. Although Apple did not make physical modifications or ROM changes to the PowerBook, the company wanted to make sure that the software was installed correctly. The NiMH software extension is also available for people who need to reinstall system software.


KEVIN CURRY

The NiMH battery has 26 watt-hours of capacity, compared with 36 watt-hours for the LiIon version, a loss of 28 percent; Apple says when all the power issues are taken into account, the functional difference is about 20 percent.

After Apple resumed PowerBook 5300 shipments, it lowered the price of the line by about $100 per model, largely because of the reduced battery capacity. Apple was able to get NiMH batteries in the 5300's unique design because NiMH batteries were already in production for the PowerBook 190 model (which is supposed to ship in late October 1995), whose design is the same as the 5300 series'.

**What Happened** The two failed batteries were being charged in PowerBook 5300's that were plugged into AC power. One of the four cells in the battery overheated and burst because of gas-pressure buildup; the electrolyte—the goo in the cell—then caught fire. PowerBooks are not designed to withstand fire.

Neither Apple nor Sony, the battery manufacturer, knows the exact cause of the failure. Every LiIon battery has multiple safety features, and several must have failed for a cell to ignite.

**Prospects for a Fix** With the PowerBook 100, Apple got into a bind because it depended on a single source for the batteries, which used lead-acid cells in an unusual size. Subsequent PowerBook batteries all had multiple suppliers—until the LiIon batteries. At one point, Sony was going to act as its own multiple supplier and produce a second LiIon battery using smaller cells, the kind that other laptop manufacturers use. But this second LiIon battery was canceled, leaving Apple with only NiMH cells as an alternative.

A fix will still take time, especially if some retooling turns out to be necessary. And then the fixed battery will have to go through many thousands of testing cycles before Apple can release it. Apple does conservative engineering, one reason that it can be slow in releasing products. In the meantime, PowerBook 5300 owners will have to stick with the shorter-lasting NiMH batteries.

In addition to Apple, PowerBook 5300 owners can get NiMH batteries from Battery Technology (213/728-7874), which claims that its MC-1950 batteries last 25 percent longer than Apple's original LiIon batteries and 45 percent longer than Apple's new NiMH batteries.

**Why LiIon Technology Is Tricky** Unlike previous battery technologies, the fussy LiIon technology requires very careful management by the charging circuits; for example, the voltage used to charge the cells can vary from the ideal charging voltage by only 1 percent—a far tighter control than nickel-cadmium (NiCd) or NiMH batteries need. Lithium in its metallic form is highly reactive and releases hydrogen on contact with water. The lithium in a LiIon battery is not in a metallic form, but the electrolyte still cannot contain any water. The only electrolytes available that meet this requirement are made from flammable organic chemicals. In NiMH and NiCd cells, the water-based electrolytes are not flammable.

That's why all LiIon batteries sold for use in consumer products come in battery packs, with a microcontroller chip integrated by the battery maker, rather than as loose cells.

Still, LiIon batteries are widely used, for camcorders and portable CD players as well as for laptop computers. None of the battery engineers *Macworld* has talked with have ever heard of another case like the flaming PowerBooks.—CARY LU

# Suits Allege Monitor Fraud

**LIKELY OUTCOME IS REVISED CRT SIZE CLAIMS**

Fifty-one monitor makers, including Apple, are named in 25 lawsuits alleging that the manufacturers mislead the public about the size of their screens. Filed in three California counties, New York, and New Jersey, the suits say the manufacturers' practice of describing a monitor's total CRT size instead of its viewable screen area is an unfair, unlawful business practice and constitutes false advertising. Through legal or extralegal pressure, the suits are likely to result in changes in how vendors describe and label monitors.

Among the companies named in the suits are Acer, Apple, Compaq, Dell, Digital Equipment Corporation, Hewlett-Packard, Hitachi, IBM, Mitsubishi, Nanao, NEC, Nokia, Panasonic, Philips, Radius, Sampo, Samsung, Sony, Tatung, Toshiba, and Viewsonic.

**Behind the Complaints** The size of a computer monitor is typically described by referring to the size of the cathode ray tube (CRT). But part of the CRT is hidden by a plastic casing, so the viewable screen area is smaller than the

*continues*

# In Brief

### Farallon Extends Adapter Line

Farallon Computing (510/814-5000; **info@farallon.com**) has added three adapters to its EtherMac product line: EtherMac PowerBook Adapter, $229; EtherMac Printer Adapter, $229; and EtherMac MultiPrinter Adapter, $299. Each adapter is equipped with an RJ-45 connector for 10BaseT networks and a BNC connector for thin Ethernet networks. The adapters connect LocalTalk printers, PowerBooks, Duos, and other Macs without Ethernet slots.

### Power Mac Updates

Nisus Writer 4.1 (619/481-1477, **sales@nisus-soft.com**), accelerated for the Power Mac, is now shipping. The new version adds HTML authoring tools and filters for Microsoft Word versions 4 through 6, WordPerfect versions 2 through 3.1, and RTF. Upgrades from 4.0 are $15; from previous versions the cost to upgrade is $99.

Water's Edge Software's new Tools Plus 2.6 (416/219-5628; **watersedge@eworld.com**) is not only Power Mac native but adds support for the popular CodeWarrior compiler. Owners of Tools Plus for C/C++ or Think Pascal can upgrade to the Power Mac version of C/C++ or Pascal for free.

Managing Editors' Ad Layout System (215/886-5662; **info@maned.com**) is Power Mac native with version 2.0. Users who purchased version 1.5 after January 1 can upgrade for free, as can Premium Site Support holders. Other users can upgrade to the $7995 program for $1600.

### Apple Remakes eWorld

After two years of disappointing membership figures (currently at about 115,000), Apple (408/996-1010) has essentially given up on its eWorld online service and announced plans that would convert it into an Internet access service beginning in mid-1996. The current America Online–based interface would be eliminated under the change.

CRT size. A spot check by Macworld Lab found the diagonal screen sizes of 14 monitors were about 1.35 inches smaller than the advertised size. On average, those displays are 16 percent smaller in area than advertised. The Federal Trade Commission requires that the advertised size of television picture tubes refers to the viewable area, but that requirement does not apply to computer monitors.

The first suit was filed in March by Gordon Spencer, district attorney in Merced County, California, against 13 manufacturers after a county resident bought a 14-inch computer monitor and found it was much smaller than the advertised size, according to Larry Morse, a deputy district attorney in the county. The County's Division of Weights and Measures conducted a survey of monitor sizes and found that diagonal screen measurements varied widely.

"In the most egregious cases, we saw 15-inch screens that were smaller than 14-inch screens," Morse says. Morse says the DA's office hopes to have the suit resolved before the end of the year. The California State Attorney General's Office is also working on settling the case, according to press secretary Steve Telliano.


KEVIN CURRY

**New Measurement?** *Macworld* obtained a draft of the California attorney general's stipulated final judgment, which would prohibit manufacturers from misrepresenting the screen's viewable size. (The draft of the judgment represents one version, but not the final one, of a settlement proposed by the attorney general.) It would require companies to "conspicuously and clearly" describe monitors by referring to their viewable size, and it would prohibit makers from using a model or brand name that includes a number that refers to the diagonal measurement of the CRT.

The judgment would require widespread changes of product names. Companies selling products that include the CRT size in their name—a common practice—would have to change those product names from, for example, the Mac Monitor 21 to the Mac Monitor 19.5.

Donald Driscoll, a lawyer in Oakland, California, filed 21 suits in San Francisco Superior Court in May against monitor makers. Driscoll predicts the suits will force manufacturers to change how they describe products. "The question is how quickly they'll do it, and how they'll represent the display sizes," he says.

"The thrust of this litigation is that our advertising is somehow false," says Rick Salwen, a lawyer for Dell. "If you look at any Dell monitor advertisement, it will always state the screen size in inches followed by the word *CRT* or *cathode ray tube*. How can it be deception to advertise a 15-inch CRT if the monitor has a 15-inch CRT?" Representatives for Apple, Acer, Mitsubishi, NEC, and Viewsonic declined to comment.

Asked about the ramifications of the California attorney general's proposed sanctions, a marketing representative at a major monitor company, who asked not to be named, said the changes would "really open things up to confusion. Now, the sizes help people compare monitor families. If this changes, each vendor's going to come out with a different standard. The market will become confusing. I can't imagine any company will put out a product called the 15.6."

This representative also said the change would be very expensive for manufacturers. "We're talking a lot of money—boxes, artwork, data sheets—the cost is substantial."

At the encouragement of the Federal Trade Commission, the Electronic Industries Association's Consumer Electronics Group has formed a task force to develop voluntary guidelines. Meanwhile, many computer companies have begun listing viewable screen areas in advertisements. But the changes to current advertisements won't make the pending lawsuits go away.

—JOANNA PEARLSTEIN

## BUGS & TURKEYS

Connectix's SpeedDoubler crashes with Apple PowerPC upgrade cards. Connectix (415/571-5100; **connectix@aol.com**) says there are four workarounds: (1) install the company's RAM Doubler, (2) turn on virtual memory, (3) install MacsBug, and (4) change the name of SpeedDoubler's Speed Access extension to Speed~Access, so it loads after Speed Emulator. Connectix says it is working on a more elegant and permanent fix. Some users are also reporting a variety of conflicts with other extensions or combinations of extensions.

MacCIM, the CompuServe front end, conflicts with System 7.5.2's Modern Memory Manager on a Power Mac 9500. CompuServe (614/529-1349) says the workaround is to disable the memory manager every time you use MacCIM. CompuServe says version 3.0, due out by the end of this year, will fix the problem.

ClarisWorks 4.0 doesn't close up empty fields in a mail merge, leaving big spaces between fields. Claris (408/727-8227) is aware of the problem but cannot specify when it will be fixed.

America Online's mail system now displays only the first 2K of long Internet messages and attaches the entire message as a file that most Mac word processors display with extraneous characters. Use your word processor's find-and-replace feature or a shareware utility such as Add/Strip or DOSWasher to remove the extra characters. AOL (703/893-6288) plans to improve its handling of long Internet mail by the end of 1995.

*Macworld* will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-Shirt if we shoot your turkey in this space. See *How to Contact Macworld.*

# Word 6.0 Survives Fiasco

### SALES HAVE PICKED UP

Alienated by Microsoft's slow product delivery and bugs in Word 6.0, some Macintosh users are sticking with Word 5.1 or trying competing word processing applications, but the economy of the Microsoft Office suite is insurance against a mass migration, analysts say.

Users complain that even with performance and other fixes in Microsoft Word 6.0.1, the program is sluggish, requires more memory than

Word 5, and lacks Word 5's Mac-like user interface. They are also peeved that, following the release of the Windows version, it took Microsoft a year to release Word 6 for the Macintosh, and even longer for a Power Mac version. "Microsoft is screwing up as far as Macintosh development is concerned," says Hans Hansen, editor-in-chief of the *BMUG Newsletter*. "Word 6.0.1 is ridiculous. It has some interesting features, but most people don't want to run it. It's way too big."

Despite the level of dissatisfaction, single-package sales of Word took 25 percent of the Mac word processor market share in U.S. sales for May, compared with 6 percent for Novell's WordPerfect, according to Computer Intelligence InfoCorp (CII), a market researcher. Word 6.0 sales for the Mac had slumped to 15 percent in February after performance problems were reported in January. Sales were 16 percent in March, the month version 6.0.1 was released, and jumped to 30 percent in April.

Meanwhile, corporate users, who make up the bulk of the word processing market, are drawn to the economical price of suite packages, where Microsoft remains the only game in town, say analysts. U.S. sales of Microsoft Office for the Macintosh represented 68 percent of the Mac word processing market in May (giving Microsoft a whopping 93 percent overall), down only slightly from 71 percent in January, according to CII.

WordPerfect's Mac sales have been inching higher with single-package buyers, says Chris Le Tocq, president of SoftTracks Software Research. "It's very difficult for someone to change the word processor they use. It's one of the hardest things to do. The fact that WordPerfect picked up at all is fairly significant."

Tom Williams, product manager for Word for the Mac, says Microsoft was concerned with the user response over Word 6.0, and he admits that "we're not proud" that it lagged so far behind the Windows version.

However, he says the interface changes are innovations based on user research and defends the new features in Word 6.0.1, including an editable print preview, pasting that automatically adjusts to spacing, and the ability to undo up to 100 previous actions.

Microsoft says version 6.0.1 will run on a 68030 microprocessor but recommends it be used on a 68040 or a Power Mac. "In the future, we will continue to produce great applications for the Mac," Williams says. "By year's end we will have a Web Assistant Mac browser and new versions of all the Office applications."

But analysts are skeptical, pointing out that Microsoft has not even voiced plans to offer complete Mac support for its ballyhooed Visual Basic development technology. "When you're the big guy, you can rest for a roll of the dice, or two," says Mary Conti Loffredo, PC and consumer software analyst at International Data Corporation.

—ELINOR MILLS

# Cell Phones and Modems Get Cozy

**TWO-IN-ONE DEVICES GIVE ROAD WARRIORS ONE LESS HEADACHE**

With cellular airtime and roaming prices still in the stratosphere, checking your E-mail over a cell phone is an expensive privilege—when you can even get your modem to work with your phone. But well-heeled road warriors frustrated by the current marriage of inconvenience between modems and cellular phones will have more manageable options soon.

AirGo Communications (801/269-7200)—until recently a division of Dayna Communications—has announced the PhoneCard, which combines an analog cell phone and a 14.4-Kbps fax modem into a single Type III PC Card. With the card, users can send and receive faxes and data or make voice calls with either the PowerBook's speaker and microphone, Jabra Communications' EarPhone, or the AirGo HandSet (which is sold separately).

Not just a microphone-speaker assembly, the HandSet has a slot for the PhoneCard—put the two together and you walk away with a fully functional cellular phone. For more details on Apple's PC Card PowerBooks and the cards they can carry, see the feature "PowerPC Portables" and "First Add-Ons to New PowerPC PowerBooks" *News, Macworld*, November 1995. The PhoneCard also has an RJ-11 jack, so you can use it over an ordinary land-line.

With AirGo's AddressBook software, users can place voice, data, or fax calls by clicking on the appropriate icon; they can also send faxes or E-mail by dragging and dropping documents onto the desired number. While the PhoneCard is plugged into your Mac, AddressBook will also act as a digital answering machine, storing messages on your hard drive. You can select up to 200 contacts to be stored on the PhoneCard; when the card is plugged into the HandSet, those contacts are accessible via a four-line LCD window. The PhoneCard package, including the HandSet and cables, is expected to be available by February 1996, for a street price under $1000.

Focusing on the cell phone as an all-in-one device, Air Communications (408/567-8000) integrated a 14.4-Kbps fax modem into the housing of a cellular phone. Its AirCommunicator Executive plugs into the Macintosh serial port, but on its own it can act as an answering machine, storing up to 16 minutes of messages, or as a send/receive fax machine, with RAM for up to 37 pages.

Users can keep frequently used faxes in the AirCommunicator and send them with a few keystrokes, while the unit stores received faxes for later downloading and printing. Both AirCommunicators are shipping, with prices starting at $695 for the Lite version. Dealers and cellular providers generally offer rebates or discounts on hardware at the time of purchase.

—CAMERON CROTTY



RICHARD RETHEMEYER

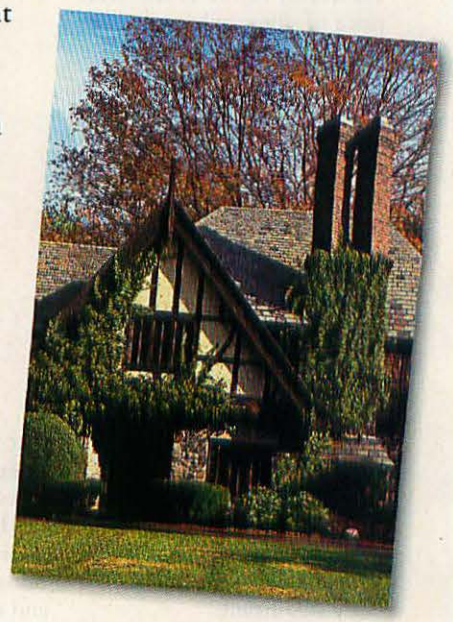
**AirGo Communications' PhoneCard Type III PC Card slides into your PowerBook or the HandSet pictured here.**

AGFA COLOR SCANNERS



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**To make sure their hearts go pitter-pat, you scan it in with your Agfa scanner.** After all, you want the colors to be perfect. And you don't want to lose the lovely details. Exactly why you use it to scan in the photos for sell sheets at your real estate office. Maybe you're not a superhero. But with such great-looking sales tools, you can sure move houses.



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# Power Mac News

## The PCI Bus's New Course

**NEW STANDARD SHOULD PUSH PERFORMANCE**

With the new PCI Power Macs available for business and high-end users, and a PCI-based Power Mac 6200 (based on the 6100's flat design) rumored for delivery this fall, you'd think Apple could rest on its laurels. Not so. The PCI effort—and thus PCI-based Macs—will evolve as the PCI standard changes in coming months to increase performance. While PCI was invented by Intel, it is now controlled by a group of companies under the auspices of the Institute of Electrical and Electronics Engineers (IEEE), a major standard-setting body. And Apple is a voting member of the IEEE committee that decides how PCI will evolve.

**Fine-tuning PCI** In the short term—by mid-1996—Apple's PCI Macs will support *faster data transfers* (up to 80 MBps for reads, compared with 45 MBps at present) and implement the forthcoming PCI 2.1 standard specifications for better support of real-time applications like video editing, according to Denis Précheur, Apple's marketing manager for PCI. (The current Macs support PCI 2.0, as do most PCs.) Apple will likely have both PCI 2.1 and PCI 2.0 slots in future PCI Macs, so cards that require 2.0 could still be used. But the IEEE PCI committee is investigating a PCI 2.1 design that would support both cards, and if it comes up with such a scheme, Apple would make all of its slots PCI 2.1–standard.

**Doubling PCI performance** It's a foregone conclusion that the next major version of PCI—version 3.0, due in late 1996 or early 1997—will double the data throughput from PCI 2.0's 128 MBps to 256 MBps. (Keep in mind that this throughput is what the bus supports; each card can use only a portion of it, and only the highest-performance computer systems can process that amount of data at one time.) The question is how.

There are two approaches: make the bus run twice as fast, or make the bus's data channels able to carry twice as much data. Apple has been encouraging the latter option, since it will be easier to integrate it into existing Macs and PCs, but the company says it will adopt whatever approach the IEEE standards committee agrees on. Both approaches have strengths and drawbacks.

- Speeding up the PCI bus from the current 33MHz to 66MHz means that the PCI subsystem and cards must run on 3.3-volt power, rather than today's standard 5V power. (PCI slots running at 66MHz would also run current 33MHz PCI 2.0 cards if designed for 3.3V and 5V.) The computer industry is moving to 3.3V (for example, the new Pentiums are 3.3V




CPUs, and the latest PowerPCs are close, at 3.6V), but for Apple and others to move to a 66MHz PCI bus means that card makers will have to design their cards to run at either 5V or 3.3V, depending on whether they are being used in a PCI 2.0 computer or in a PCI 3.0 computer.

Another issue with the 66MHz approach is that to support 3.3V power the controller chips must have circuitry that's no more than 0.5 microns (millionths of a meter) wide. While circuit widths of 0.5 microns and narrower are standard for CPUs, they are not standard for other chips, and it will take some time for chip makers to convert their designs and manufacturing plants to handle 0.5-micron circuitry. With chip-fabrication facilities already at a premium, such a conversion could tighten the already tight chip supply.

A third issue, according to chip maker Qlogic, is that 66MHz designs are difficult to develop. At such high speeds, it is harder to manage the electromagnetic emissions so that cards, chips, and motherboards don't interfere with each other or with telecommunications devices. That increases development time and cost. The yield—the number of working chips per batch—is also lower on high-speed, narrow circuits.

- Widening the PCI bus to handle 64 bits of data rather than the current 32 bits means that the number of connectors from the PCI chip to the PCI card will need to double. In the tight spaces of a card, that means a redesign of how the chips are connected. Such a redesign exists—the Bumper Grid Array—but it is expensive, according to PCI card companies. The connectors on the cards, in the slots, and on the chips would also have to accommodate today's 32-bit cards. But a 64-bit PCI design would work with today's 5V cards and systems.

**Faster and wider** Over the long term—by the end of the century—Précheur expects PCI to both be 64 bits wide and run at 66MHz, providing 512 MBps throughput, at least as a theoretical maximum. That kind of throughput would allow computers to process multiple video streams and simultaneously support very high-speed networking.—GALEN GRUMAN

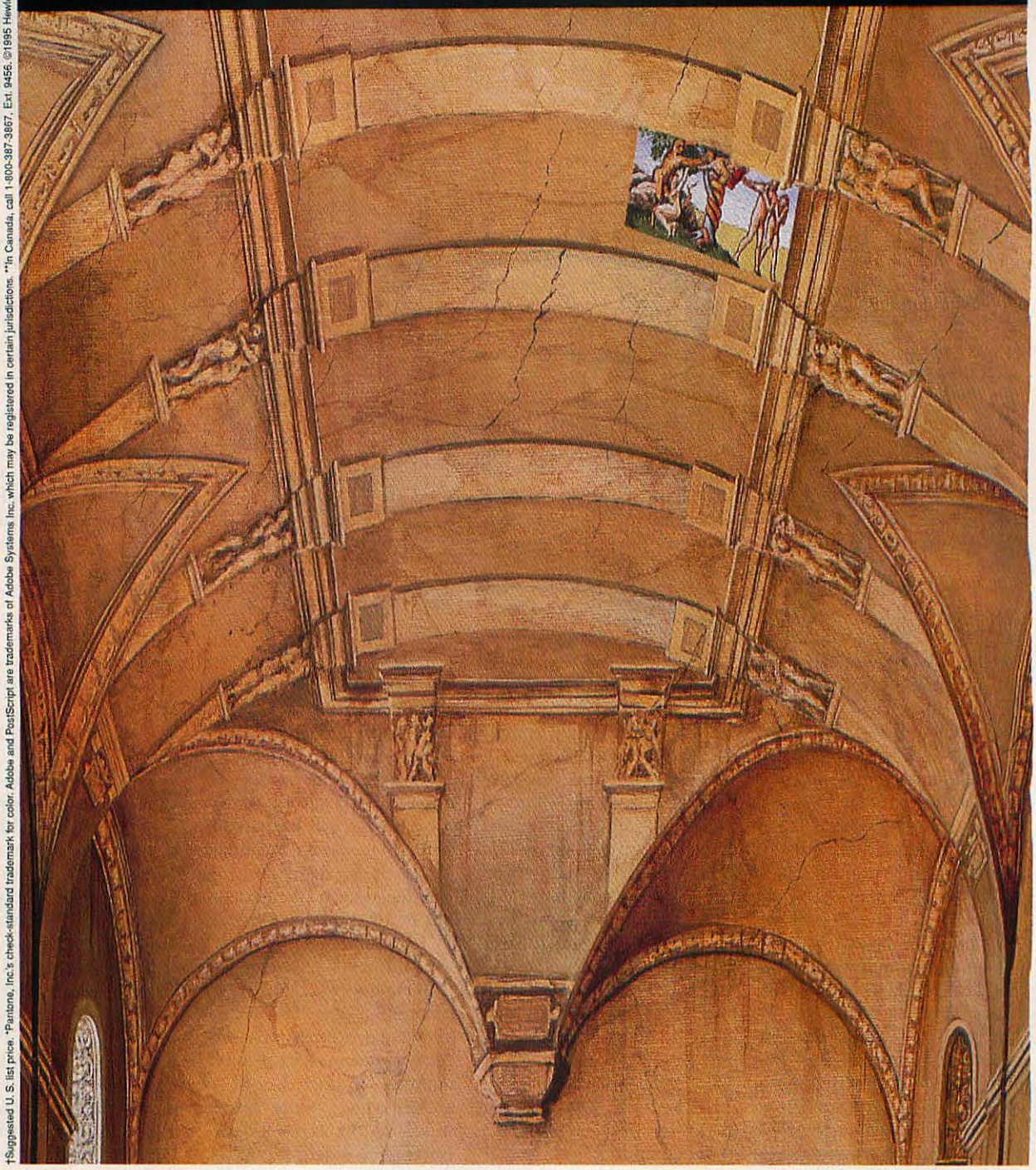
### PCI Speedup Trade-offs

The current PCI 2.0 standard moves data 32 bits at a time along a bus running at 33MHz. To double PCI performance, one of those aspects must be doubled. There are pros and cons to either approach.

| | Moving to 66MHz | Moving to 64 bits |
|---|---|---|
| PROS | • Uses existing connectors.<br>• Supports 3.3-volt PCI 2.0 cards. | • Works with today's 5-volt card technology. |
| CONS | • Requires 3.3-volt circuitry.<br>• Chip-making plants for required controllers are overbooked.<br>• Harder to design because of high clock frequency. | • Requires expensive new connectors.<br>• PCI 2.0 cards will require separate slots. |

KEVIN CURRY

# What if Michelangelo had been confined to an 8½ by 11 inch space?





The HP DesignJet 755CM large-format printer

Let's face it. Life is bigger than 8½ by 11 inches. With an HP DesignJet 755CM printer, you can now print beautiful, near-photo-quality output at sizes up to 3' by 9'. Right in your office. With the creative freedom to print whatever you want, whenever you want. And at just $11,995†, the HP DesignJet 755CM comes fully equipped with improved PANTONE®*-licensed colors, True Adobe™ PostScript™ Level 2 software, 68 MB of memory, and a one year on-site warranty. A variety of paper stocks are supported, including glossy. For an output sample or to see a demo, call 1-800-354-7622, Ext. 9933.**

HEWLETT® PACKARD

†Suggested U.S. list price. *Pantone, Inc.'s check-standard trademark for color. Adobe and PostScript are trademarks of Adobe Systems Inc. which may be registered in certain jurisdictions. **In Canada, call 1-800-387-3867, Ext. 9456. ©1995 Hewlett-Packard PE12573

**Circle 11 on reader service card**

# Macworld Online

by Macworld Online Staff

## Who Pays for the Web?

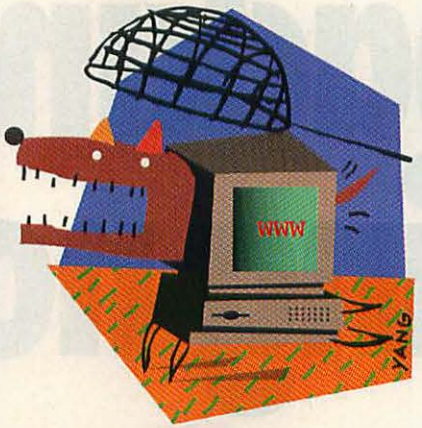
"To be free or not to be free," *is* the question that plagues today's World Wide Web publishers. On the one hand, there is the inherited wisdom of the Internet: Information wants to be free. On the other, there is the expense of workstations, high-bandwidth delivery systems, and specialized software suites, not to mention the long human hours devoted to creating all those HTML pages. If we're to see a continued burgeoning of Web content, publishers must walk a line that satisfies the temperament of the Net and bill collectors alike. Finding that balance without jeopardizing the privacy of Web denizens is an even trickier proposition.

In traditional publishing environments, advertising is the primary source of revenue. Ad rates are calculated by the placement of the ad, as well as by the number and quality of readers based on a publication's demographic surveys. Due to the way most publications are constructed, advertisers have a reasonable expectation that at least some readers will read their advertisement.

Online advertising is a somewhat different enterprise. Because readers choose whether or not to click on a vendor's banner, for instance, the content of the advertising must provide an additional lure for the reader. Common hooks include giveaways, discounts, contests, and supplemental information such as spec sheets and white papers. In return, advertisers are beginning to expect detailed information about the individuals who click on their ads. Hence the proliferation of online demographic surveys. You don't need to be a conspiracy theorist to worry that your private information may soon become the currency of the Net.

Macworld Online's solution to this dilemma is Macworld Passport, a free membership area on our Web site with special prizes and offers from advertisers. Members fill out a short questionnaire with full assurance from Macworld Online that we will not share their personal data. (We do provide aggregated information—the percentage of members who log on at 28.8 Kbps, for example.) Because advertisers offer Passport members tangible benefits, they should see more hits per advertising dollar.

Meanwhile, we suggest that you ask these questions when requested to provide sensitive personal information online: Is there a guarantee that it will not be sold? What am I getting in return? Will this result in junk E-mail? And inevitably, should I tell the truth?




## Save CyberDog

Windows 95 may mimic the interface, but Microsoft still can't boast the personality that Apple gave the Mac. Born as a company with a rebellious flair, Apple shows its élan in the code names it gives to products under development. Unfortunately, in its zeal to establish itself as a business force, Apple abandons those monikers when it releases the products.

An excellent example is CyberDog, the OpenDoc-based Internet technology now in development (see "Internet's Next Big Step," *News*, September 1995). Rumor has it that staffers at Apple think CyberDog is a great name but that CEO Michael Spindler has nixed it. Instead, we're told, we can expect another dreary name like the Apple Internet Server Solution for the World Wide Web—how very Microsoft. Apple can do better, and we want to let them know it. If you agree, send E-mail to **cyberdog@www.macworld.com** explaining why Apple should stick with CyberDog, and we'll forward the messages to Michael Spindler. We will also publish the best letters in our Technocultural Cafe. m

### LIVE-EVENTS CALENDAR

Plug into Macworld Live for weekly real-time events that feature some of the brightest stars in the Macintosh universe. In addition to our troubleshooting clinics, we bring editors and writers, artists and visionaries directly to your desktop. AOL events are on Thursdays and eWorld events are on Wednesdays. All events are 6 p.m. Pacific time.

**Ask Cary Lu**
**November 1, eWorld**
Cary Lu is *Macworld's* digital nomad, reporting on mobile- and remote-computing issues in his *PowerBook Notes* column. Once a month, Cary checks in, to answer your questions on these topics and more. Bring your toughest Mac computing questions.

**Fast Modems**
**November 2, AOL**
Ready to make the jump to a high-speed modem? Let *Macworld* senior editor Howard Baldwin introduce you to the new standard: 28.8-Kbps modems. Come hear which modem fared best in our Macworld Lab tests.

**Costa's Clinic**
**November 9, AOL; November 15, eWorld**
Are you a new Macintosh owner or a power user in training? Join Macworld Online's technology guru Steve Costa for his monthly virtual Mac clinic. Steve will help you tune up your computer, outfit it with great shareware, and give you the scoop on all things Macintosh.

**Interactive Photojournalism**
**November 16, AOL**
The photographic wizards behind Alice to Ocean, the *Day in the Life* books, and the stunning Passage to Vietnam CD project are stretching the definitions of photojournalism. Join us for a discussion about interactive photography in the digital era.

**Jim Heid Q&A**
**November 30, AOL**
No Macintosh owner should be without contributing editor Jim Heid's *Macworld Complete Mac Handbook*. At this monthly event, Jim takes a detour from his usual topics to talk about digital audio editing on the Macintosh.

**REACHING MACWORLD ONLINE**

**America Online and eWorld**
Keyword is Macworld
**World Wide Web**
URL is
**http://www.macworld.com**

JAMES YANG

# Are you backing up or going nowhere?

You have good intentions. You drag your important files to a disk or server. But just imagine you need to restore everything right now. Ouch! Reassembling your hard disk would be like trying to put together the VCR your five-year old took apart.



*To save time and space, we back up only what's new and different.*

**1.** *Dragging makes backing up a real pain.* There's just too much to remember. Which files did you change? What's new? When did you back up last?

Retrospect® is the better way. It always knows when to back up and what's changed. And it's fast, automated, and painless. You can find a file in seconds. Or restore an entire hard disk in minutes – same as it ever was.



*Ever try to restore an important file that's been dragged to a mountain of floppies? Good luck.*

**2.** *Backing up the right way is actually faster and easier.* Retrospect gives you complete backup that saves time and backup media. Not to mention frustration.

**3.** *It's not a matter of if disaster strikes. It's when.* It'll happen to half of you this year. Fires, five-year olds, disk failures, a slip of a finger. Retrospect is simply your best insurance policy. Don't wait until it's after the fact to discover that the other guys' recovery tools won't bring back what's gone.



**4.** *Retrospect teams up with tape or cartridges.* It's no wonder Retrospect's bundled with just about every Macintosh tape drive sold. It's no slouch with SyQuest, MO, or Zip drives either – put them together with Retrospect and you've got a powerful backup machine.






*Nothing's as faithful as Retrospect. We even back up your preferences. So if disaster strikes you won't roll over and play dead.*

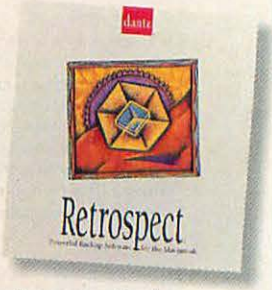
**5.** *All backup software's not the same.* Retrospect's the most trusted and recommended backup software in the business. It has the awards. The reviews. The customers. Plus key features those other programs don't have – compression, encryption, comprehensive scheduling, and support for practically every SCSI drive in the universe.




*Get Retrospect free with the best backup drives. Look for this mark of quality.*

You want more proof? Give us a call: 800-95-BACKUP. We'll fax back 10 more reasons Retrospect's the best way to save your data. Your work is worth it.






dantz® *To go forward, you must backup.*

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**Circle 26 on reader service card**

# New Products

THE LATEST MACINTOSH RELEASES

by Jim Feeley
and Joanna Pearlstein

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY *MACWORLD*. UNLESS OTHERWISE STATED, ALL PRICES ARE SUGGESTED RETAIL AND THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS WITH 1MB OF RAM, RUNNING SYSTEM 6. A ◀ SIGNIFIES THAT A NATIVE POWER MAC VERSION OF THE PRODUCT IS AVAILABLE. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY *MACWORLD*. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

## HARDWARE AND ACCESSORIES

### AutoBoot Commander 1XP

This monitor, keyboard, and mouse switch allows a user to control up to 48 Macs, PCs, or Sun workstations from a single keyboard and monitor. Home-office users who must juggle multiple computer platforms can save money and space by eliminating redundant monitors and keyboards. IS managers can keep their cubes from looking like a Yanni concert stage. $595 plus $185 for each computer to be controlled. Cybex, 205/430-4000; fax 205/430-4030.

### CSD-7611M CD-ROM

Sony's 4X external CD-ROM drive aims to satisfy the needs of demanding multimedia users. The drive offers a 256K buffer and an average access time of 190ms. It loads CDs on a tray, not with caddies, but can still be oriented vertically. The drive includes a self-cleaning lens, a headphone jack, and audio line outputs. $399.95. Sony, 408/432-0190, 800/352-7669.

### The DataPorter

If you are tired of juggling a PowerBook, a cellular phone, a day planner, and other equipment every time you venture out of your cube, this satchel holds an office-on-the-go. The DataPorter has nine compartments and pockets, including a 13-by-5-by-11-inch padded interior with movable divider, an office-supply organizer, and an expandable zipper pouch for documents. The 1050 Denier black nylon bag has a rear panel of soft canvas to protect clothes. The Saunders Group, 716/328-7800; fax 716/328-7800, 800/394-3686; **saunders7@aol.com**.

### Delta Vx 2.0

This high-end real-time MPEG production system provides improved video output at a lower price than previous versions. Aimed at people who make their living encoding video to MPEG, Delta Vx doesn't constrain users to preset pixel and aspect ratios. Removing this barrier lets users encode at the ratios best suited to delivery platforms such as CD-ROM, CD-i, or Video CD. Other features include inverse telecine support, more accurate placement of I-frames, and frame-accurate stream termination. $55,000. OptImage, 515/225-7000, 800/234-5484; fax 515/225-0252; **sales@optimage.com**.

### hammerTape-PE 2G

The hammerTape-PE, which is based on the Conner QIC-3080–compatible tape drive, holds 2GB of native capacity on a QIC-Wide tape cartridge and 1.6GB on a QIC-3080 cartridge. Software compression in the bundled Dantz Retrospect allows you to store up to 4GB of data on a single QIC-Wide tape. FastSense technology lets the drive slow down from its default 450-KBps sustained throughput to 300 KBps or 200 KBps. Ironically, this slowdown improves backup speed and reduces wear on the drive because it cuts down on the need to reposition the tape during recording. The drive ships with one 2GB tape. $959. FWB, 415/325-4392; fax 415/833-4657.



*Intermatic EG42L*

### Intermatic EG42L and EG44TLI

These computer control centers provide power control and surge protection for a personal computer and up to five peripherals. The EG42L offers a UL Standard 1449 clamping level of 400 volts (the clamping level is the voltage at which the protector cuts off power surges). The EG44TLI has a 330-volt clamping level. The EG44TLI also has two RJ-11 phone jacks that protect modem lines. EG42L $42.95, EG44TLI $89.95. Intermatic, 815/675-2321; fax 815/675-1043.

### Legacy Computer Backpack

For students, active business professionals, and mountain-climbing desktop publishers, this backpack lets you carry your PowerBook without weighing down one shoulder. The pack has an organizer pocket, a computer compartment, and a large compartment for paper or a small printer. It also has contoured, padded shoulder straps and a padded back panel. $125. High Sierra Sport Company, 708/913-1100, 800/323-9590; fax 708/913-1145; **smartgear@highsierrasport.com**.



*LK-MC604S*

### LK-MC604S

This external 4X CD-ROM drive has a data-transfer rate of 600 KBps and a 175ms random seek time. The LK-MC604S loads CDs on its tray and can be oriented horizontally or vertically. The drive includes headphone jacks, audio output, and a power-saving feature that Panasonic claims no other CD-ROM drive has. $499. Panasonic Communications & Systems, 201/348-7000, 800/742-8086.

### The Original Mouse Couch

The Original Mouse Couch lets you control your mouse while your hand is in your lap. The hope is that this will reduce wrist and shoulder strain. The couch has standard mouse pad stitched into a fluffy cushion that rests in your lap. Available in many colors and with cat, cow, or kid designs, or personalized fabric, the Original Mouse Couch can fit any decor. Each couch measures approximately 3 by 9½ by 11 inches. $24.95. MK Productions, 503/288-8709, 800/657-7673; fax 503/288-8709; **skymouse@europa.com**.

### PhoneMaker FRS

This hardware-software combination gives you everything you need to run a fax-back or fax-on-demand system from your Mac. The software's form-based interface lets you easily create both simple and complex systems, incorporating prerecorded prompts and call logging, as well as on-call and callback faxing. On-call faxing requires callers to phone from their fax machine's handset; callback lets callers use any phone to send information to any fax machine. By the end of the year, MicroMat plans to include an option for controlling three phone lines. Call MicroMat's fax-back system at 707/838-4231 for a demo. $799. MicroMat Computer Systems, 707/837-8012, 800/829-6227; fax 707/837-0209.




*PhoneMaker FRS*

### Polarview 105

This LCD projector, part of a new crop from Polaroid, produces sharp 24-bit color images with its 300-ANSI-lumen optical system. The metal-halide lamp projects images visible even in lit rooms. The 1.6-to-1 zoom lens displays images measuring up to a 30-feet diagonally. A 19-key infrared remote includes zoom and focus control, and the projector's multiple inputs allow two people to connect to the projector for dual presentations. The Polarview 105 weighs 23 pounds. $9495. Polaroid Electronic Imaging Systems, 617/386-2000, 800/816-2611, ext. 970.



*Polarview 105*

### Pro Throttle

If a flight stick doesn't give you enough control of your flight simulation game, maybe a throttle will help you create virtual mayhem. Based on the F-16 jet's throttle, the Pro Throttle has 20 programmable functions and a program-

*continues*

mable speed control. It ships with control-panel software and predefined button setups for the most popular games. $139.95. CH Products, 619/598-2518; fax 619/598-2524.



*Pro Throttle*

**Televisior**
This tiny scan-converter weighs only 70 grams and draws power from your Mac's ADB port. Yet it generates a sharp, flicker-free 24-bit image at 640 by 480, and provides simultaneous composite, S-Video, and interlaced RGB output. It doesn't require software drivers, and it offers image mirroring on all PowerBooks except the 150. $399. Educational Technology Consulting Services, 408/484-0322; fax 408/484-0322; **dfelt@aol.com**.

## SOFTWARE

**AgreementBuilder and LoanBuilder**
If you're a new business owner excited about your business prospects but intimidated by business technicalities, Jian wants to help. AgreementBuilder and LoanBuilder provide templates for business agreements and financial documents that small businesses commonly need. AgreementBuilder includes documents for use in managing employees and contractors, building sales and marketing relationships, and handling financial matters. LoanBuilder provides business borrowers with templates for documents, spreadsheets, and forms. Each program $139. Jian, 415/254-5600, 800/762-2413; fax 415/254-5640; **http://www.jianusa.com**.

**Arts and Crafts, Constructivist, Duchamp 2.0, and Miró**
Make an artistic statement with four new typefaces from the P22 type foundry. Based on the work of several modern artists, the typefaces are available in PostScript or TrueType format. Arts and Crafts, based on a design by Dard Hunter, is a headline font that includes decorative elements. The Constructivist face is reminiscent of Soviet Constructivist posters. The handwriting of surrealist Marcel Duchamp, the man who found art in plumbing and chemistry equipment, is reincarnated in Duchamp 2.0. P22's Miró font and Miró Extras dingbats are inspired by the paintings of Spanish artist Joan Miró. $21.95 each. P22 type foundry, 716/885-4482; fax 716/885-4482; **p22@aol.com**.

**AutoDuper 2; SuperDuper 2**
These two utilities aim to copy files faster than a speeding PowerPC 604 chip. SuperDuper duplicates Mac and PC floppies, and it can open and save DiskCopy disk images. It also compares its copies to the originals for verification, and formats disks on the fly. AutoDuper 2 has the same feature set as SuperDuper 2 but is designed specifically for tape autoloaders that use the Mountain protocol, as well as Datapath and Douglas autoloaders. AutoDuper 2, $250; SuperDuper 2, $30. Snap Systems, 408/899-4821; **snap@netcom.com**.

**binuscan II**
This publisher's tool automates correction and separation processes for color and black-and-white images. binuscan II analyzes the raw data of the original images; performs histogram analyses; and creates new, corrected TIFF, EPS, and JPEG files. You can adjust variations in image gradations, neutralize images, set black points and white points, redistribute noise levels, and invert scanned images before filtering. The product also works in the background and supports batch processing. $3950. binuscan, 212/681-0600, 800/881-2352; fax 212/681-0603; **binuscan@applelink.apple.com**.

**Blood Bath**
You're the sheriff of the curiously named town of Red Falls. A busload of bloodthirsty bad guys escaped on a nearby highway, and now they're swarming your town. What do you do? Shoot 'em up in UnderWorld's Blood Bath. A proprietary video-compression scheme assures smooth animation. The game also features hidden levels, music, sound effects, and dialogue. Available on CD-ROM and floppy disk. $39.95. UnderWorld Software, 310/827-2311; fax 310/827-7079; **undrwrld@aol.com**.

**ColorLink**
Color fax? It's not a typo. Laser Today International's software works with your scanner and color printer to send and receive color faxes. The user scans a color image and then uses ColorLink's send module to transmit the scan via modem. The ColorLink Receive module enables the receiver to view the document, which can be output on a color printer. The product uses a proprietary communication protocol called CModem. $138. Laser Today International, 415/961-3015; fax 415/961-7631; **laserto@netcom.com**; **http://www.laserto.com**.




*ColorLink*

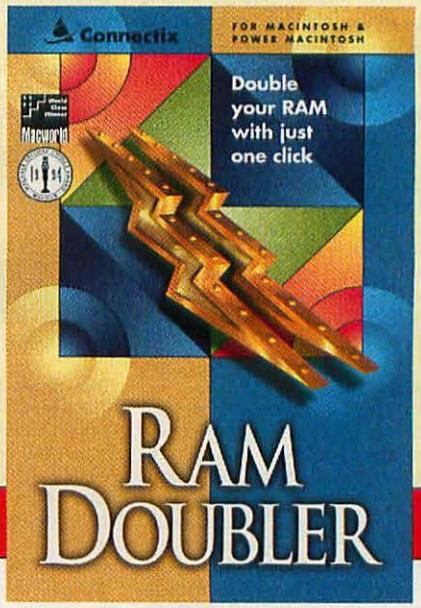
**Data Explorer**
This general-purpose scientific and engineering software offers two- and three-dimensional graphical plots, geometry contours, and section line plots. Data Explorer reads and displays data types including strain, stress, temperature, and finite element analysis (FEA) results. A

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*What Do You Say When You're Out Of Memory?*

# I need RAM Doubler.

The more memory your Mac has, the more productive you'll be. But forget about adding SIMMs. RAM Doubler™ is software that doubles your Mac's memory. *RAM Doubler does what it says it will do.~Macworld.* And you don't have to open your Mac. Just run RAM Doubler's 15 second installation and you can run twice as many applications – instantly. *May well be the best investment you make this year.~MacUser.* You'll agree. Buy RAM Doubler today and double your RAM with one click. Your satisfaction is guaranteed. RAM Doubler is available wherever great software is sold.




Connectix

System Requirements: Macintosh equipped with a 68030, 68040 or PowerPC microprocessor. System 6.05 or later, including all versions of system 7 • 4 MBs required (hard disk required for machines with 4 to 6 MBs) • Not compatible with Mac SE, original Mac Classic, original Mac LC or PowerBook 100 or Mac II without a 68851 PMMU or any accelerator that does not work with virtual memory.

© 1995 Connectix Corporation. 2655 Campus Drive, San Mateo, CA 94403 USA. 800-839-3629 • 415-571-5100 • FAX: 415-571-5195
EMAIL: info@connectix.com • RAM Doubler is a trademark of Connectix Corporation. All other trademarks are the property of their respective holders.

**Fax On Demand 1-800-234-0455 ext. 671**

**Circle 192 on reader service card**

# How do you unleash the true power of your new Power Macintosh with PCI?

MEGABYTES 32 PER SECOND!




# Apply The Hammer.

**The sky's the limit with FWB's new PCI SCSI JackHammer!**

Blast through the final performance bottleneck. Increase productivity with graphics files that open in a flash. Produce, edit and finish broadcast quality digital video at compression rates of better than 4:1. Run your file server's I/O channel faster no matter how many users are on line.

The Fast & Wide SCSI-3 PCI JackHammer transfers data at the maximum speed of any drive. Experience breakthrough transfer rates up to **32 MB/sec** by coupling the JackHammer with FWB's award winning SledgeHammer disk arrays.

FWB's comprehensive World Class Storage Solutions—hard disks, disk arrays, DAT, removables, CD & CD-R drives—are now available for the Power Macintosh with PCI.

Call **(415) 325-4FWB** today for the reseller nearest you. And, ask about how to save $200 on your PCI SCSI JackHammer with our competitive upgrade offer.

Mac™ OS

Designed for Macintosh with PCI

Hard Disk ToolKit
1991 MacUser Eddy Nominee
*Included with every PCI SCSI JackHammer.*

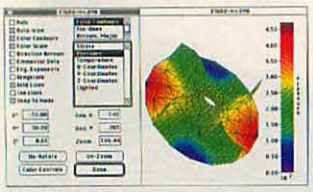
HAMMER™
*World Class Storage Solutions*

FWB® incorporated

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**Circle 175 on reader service card**

control window lets the user adjust the view to any rotation or magnification and customize the geometry display and graphical plots. The product's data-manipulation features let you modify over 25 different parameters when creating a graphical plot. $200. CamSys, 518/276-4082; fax 518/276-6380; **camsys@camsysinc.com**.



*Data Explorer*

### DragStrip 2.0

No, this isn't software for the Indy 500. Version 2.0 of this desktop organizer adds AppleScript support, the ability to display item names on buttons, support for news clippings, and customizing options for fonts and colors. With one click, you can launch applications and open documents. The utility can track and open the documents most recently launched using the strip and display the contents of any folder or volume in a hierarchical pop-up menu. $59.95. Natural Intelligence, 617/876-4876, 800/999-4649; fax 617/492-7425; **info@natural.com**; **http://www.natural.com**.

### Factor2/ARA

This remote-access security product is a software-only, two-factor authentication system for Apple Remote Access. The two-factor system verifies something the user knows (a password) and something the user has (a hard drive or floppy disk with the credential document on it). Administrators give each user a unique, copy-proof electronic credential as the second security factor. The current product works with Apple's ARA Multiport Server; support for other ARA servers is expected in the future. Server Security Module, *Administrator's Guide*, and credentials for ten users $895; ten-user Expansion Kits $495. Cyno Technologies, 408/297-7766, 800/921-7705; fax 408/297-7441; **cynotek@cyno.com**.

### First Things First 4.0; First Things First Pro 1.5

It won't pick up your dry cleaning for you, but it'll at least remind you to do so. The extension and application versions of First Things First manage to-do lists, calendars, and reminders. Version 4.0 of First Things First (the extension) adds various calendar views and makes opening and switching between files easier. First Things First Pro 1.5 (the new version of the application) adds list and weekly views and is faster. It features an outliner as well as multiple calendars and a reminder function. Extension $49.95, application $59.95. First Things First Software (previously sold by Visionary Software), 503/246-6200; fax 503/452-1198; **ftfsoft@aol.com**.

### Forté Release 2

Forté Software's client-server development tool supports transparent application partitioning across disparate operating systems, graphical user interfaces, networks, and relational databases. Version 2 adds open integration with software outside the Forté environment so that applications are accessible through the Open Software Foundation's Distributed Computing Environment, the Object Management Group's Common Object Request Broker, or Transarc's Encina transaction processing environment. Development tool $4000 to $6000; clients $225 each. Forté Software, 510/869-3400; fax 510/834-1508; **info@forte.com**.

### Internet Publishing Kit; World Wide Web Kit

Internet Publishing Kit includes Netscape Navigator, HoTMetaL Pro 2.0, and Internet Assistant. Available in Mosaic and Netscape Navigator versions, World Wide Web Kit comes with either Ventana's *Mosaic Quick Tour* or *Netscape Quick Tour* and the appropriate browser. In addition, the package contains Ventana's *Walking the World Wide Web*, a guide to the Web that includes reviews of top sites, a CD-ROM containing links to Internet sites, and an online option for obtaining updates on the information in the book. World Wide Web Kit includes a connectivity offer. Internet Publishing Kit $99 (company's estimated price); World Wide Web Kit $49.95 (suggested retail price). Ventana Media, 919/544-9404, 800/743-5369; fax 919/544-9472; **orders@vmedia.com**; **http://www.vmedia.com/**.

### Picture Easy

Call it a plug-in for a plug-in. Designed for the prepress environment, Technodroid's Picture Easy works with the Kodak Photo CD Acquire module in Adobe Photoshop. The product aims to address problems that occur in the transition from Photo CD to desktop computer to printing. Picture Easy contains a set of tables for importing Photo CD images with the density and dynamic range needed for the offset and web printing environments. $99. Technodroid, 214/387-8534, 800/269-9979; fax 214/387-8534.




*Picture Easy*

### PowerArchitect

Intended for use in tandem with MicroStation 5.5, PowerArchitect is an architectural drafting tool that lets users choose elements such as beams, doors, walls, and stairs. It uses MicroStation PowerDraft's BASIC customization language and AccuDraw capability. PowerArchitect was developed by Bentley Systems and SoftDesk. $1325. Bentley

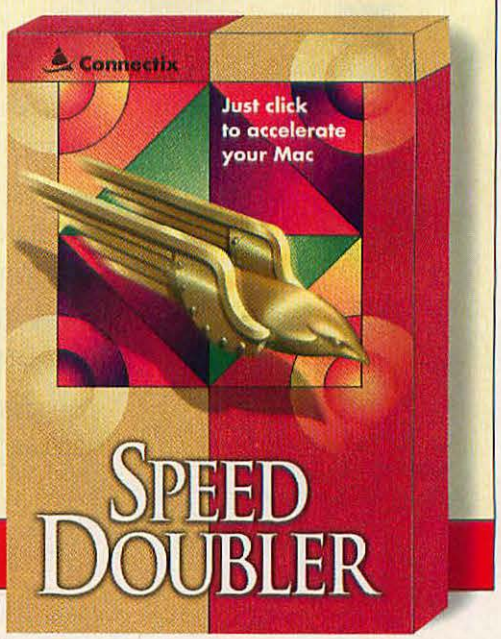
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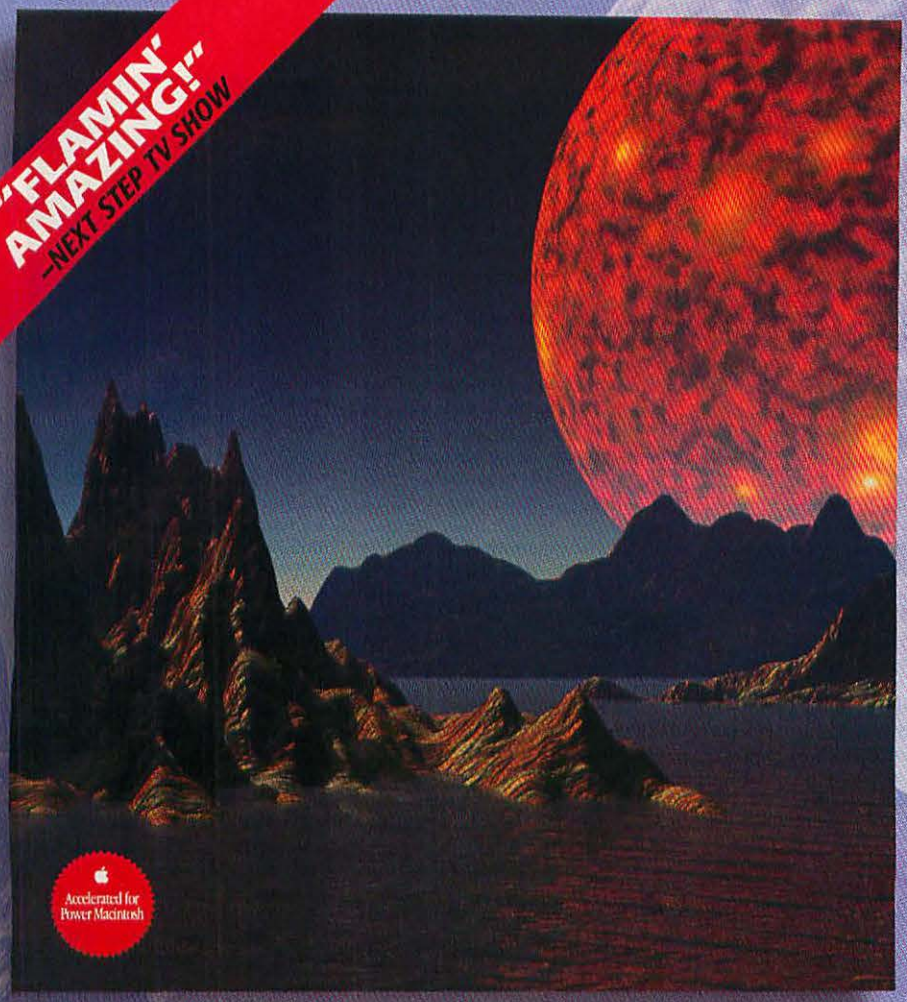
Connectix




Requirements: Macintosh equipped with a PowerPC, 68040, or 68030 microprocessor • System 7.0 or greater • 8 MB physical RAM or greater • Compatible with Connectix RAM Doubler • Not compatible with Mac Plus, Mac SE, original Mac Classic, original Mac LC or PowerBook 100

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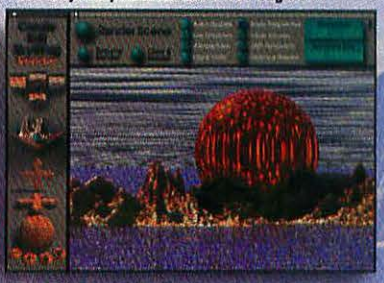




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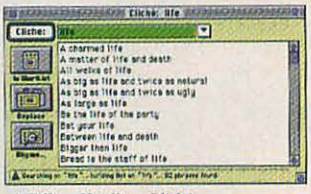
Designed for businesses that ship fewer than 20 packages per day via UPS, QuickLookups Shipper is a desk accessory that calculates shipping charges. The product finds the UPS USA rate and zone from the zip code entered; lets you add handling charges in fixed amounts, depending on where packages are going; and handles charges for Saturday delivery, COD, GroundTrac, and Blue Label letter packages. $49. ShopKeeper Software, 512/388-3290; fax 512/310-9855; **shopkeeper@aol.com**.

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## CD-ROMS

### Corel Gallery 2

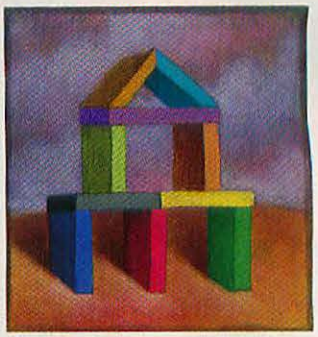
Corel's clip-art manager features an album containing 15,000 clip-art images and symbols, 500 fonts, 75 sounds, 10 QuickTime movies, a copy of Adobe Type Manager, and a font-management utility. Users can import and export MacPaint, TIFF, and PICT files, among others; add clip art to word processing, desktop publishing, or multimedia files; and search images by topic. $99. Corel, 613/728-8200, 800/772-6735; fax 613/761-9176; **http://www.corel.ca**.

### Darby, My Dalmatian

Teach your child to be a responsible pet owner. Darby, My Dalmation is an educational storybook for children ages three to ten. The CD-ROM includes 15 interactive storybook pages, with 225 animations and 20 original tunes. Each page contains links to a miniature encyclopedia of facts about animals and the environment. Kids can control the pace of the story themselves or watch it unfold. The product also includes 15 games to test math, vocabulary, memory, and perceptual skills. $24.99 (company's estimated price). Developed by Furry Pants Productions. Image Smith, 800/876-6679; **http://www.encantada.com/furrypants**.

### Master Series Illustration Library

Instead of the same black-and-white clip art, why not spruce up that annual report with award-winning illustrations? Each volume of the Master Series Illustration Library contains 60 color illustrations in three image formats: high-resolution JPEG files, 300-dpi TIFF files, and low-resolution 72-dpi TIFF files, all in CMYK format. Scanned on high-end scanners, the images have been retouched and color corrected. Images are royalty free and can be used for any type of project except for creating products for sale. $379 each. Master Series Illustration Library, 801/377-3954, 800/641-1803; fax 801/466-6846; **http://www.xmission.com/~wwp/master.html**.



*Master Series Illustration Library*

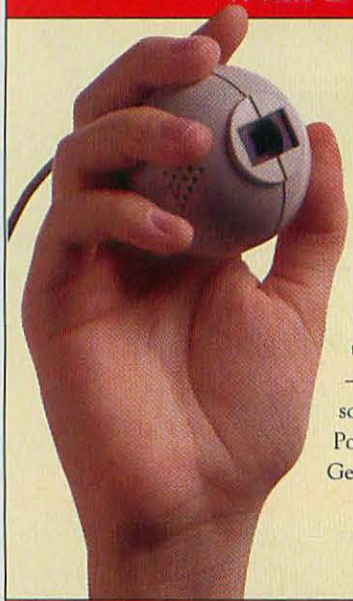
### On Campus 96

If your kid studies computers in college, maybe he or she will be the author of On Campus 2008. This CD-ROM is an interactive guide to over 1700 colleges and universities in the United States. The five-CD package brings 300 of the best schools to life through campus maps and video clips. Instead of navigating the CD via menus, users click on icons, such as a book to research colleges, a videotape to see school videos, or a map to see the campus layout. $49.95 (company's esti-

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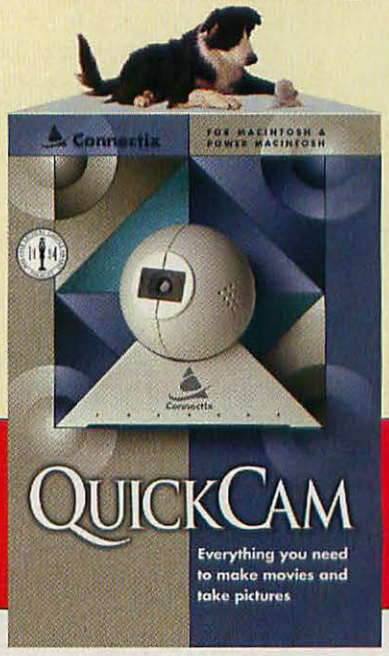
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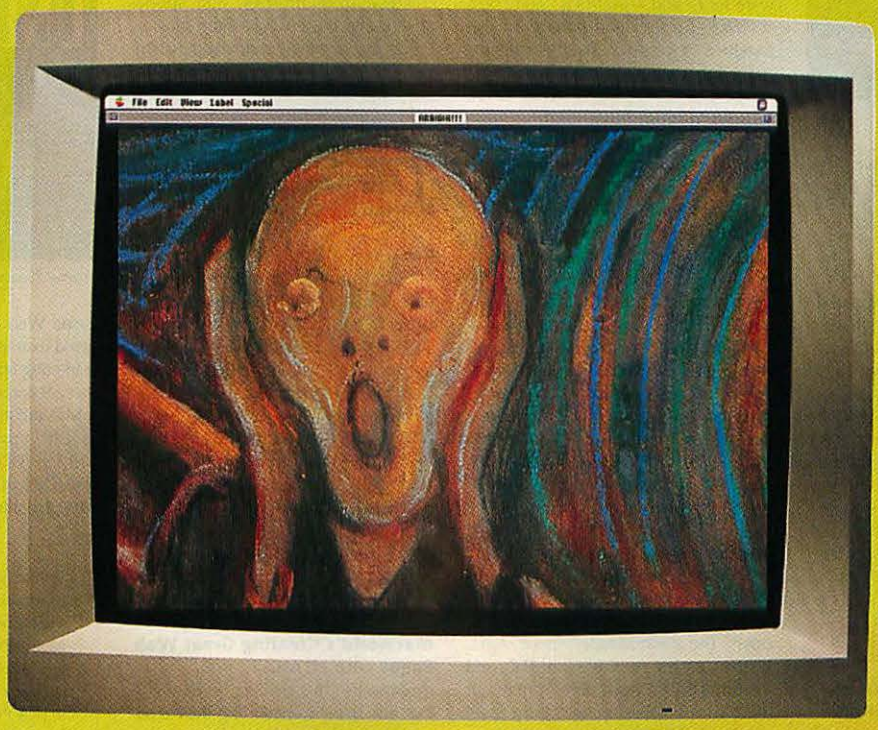

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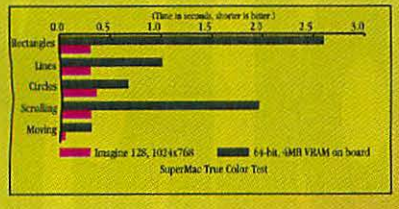
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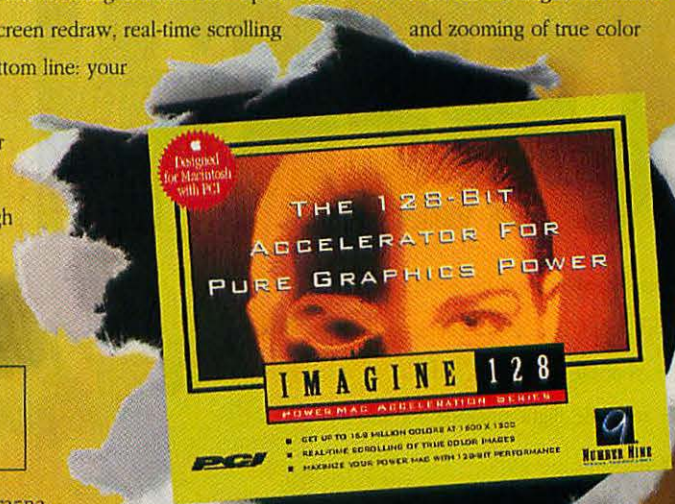
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mated price). Kaplan InterActive, 212/752-1840; fax 212/752-1845; **http://www.kaplan.com**.

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## BOOKS

**The Computer Museum Guide to the Best Software for Kids**
Having a hard time finding good software for someone between a 2 and 12 years old? This book features more than 200 reviews and ratings generated by family testers. Authors Cathy Miranker and Alison Elliott want to help families build a software library that kids will both enjoy and use. Lists such as "best software for 6- and 7-year-olds" and "best software for kids and parents to use together" help you choose the right program for any child. 266 pages. $16. HarperCollins, 212/207-7000, 800/331-3761; fax 212/207-7901.

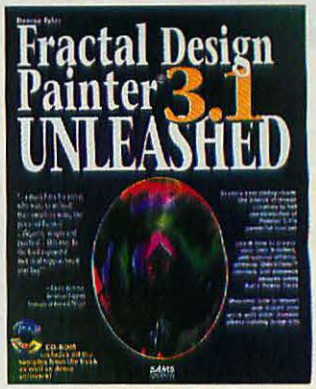
**Fontographer: Type by Design**
If you can't find the typeface you need in the *Font Reference Guide* (see below), Stephen Moye's book can help you create your own. He describes the art, design, and technology involved in creating fonts with Macromedia's type-design program, Fontographer. He discusses the aesthetics of type design and provides information on resolving TrueType problems, building a complex character, and generating bold, condensed, and other versions of existing faces. 275 pages. $29.95 MIS:Press, 212/886-2993, 800/488-5233; fax 212/807-6654; **76712.2614@compuserve.com**.

**Font Reference Guide**
Jeff Level, Bruce Newman, and Brenda Newman display the complete font software libraries of over 60 typeface developers. The guide includes Adobe, Agfa, Bitstream, The Font Bureau, ITC, and T-26 fonts; if it's not here, it may not exist. The publisher also sells all the faces displayed. 700 pages. $39.95. Precision Type, 516/864-0167, 800/248-3668; fax 516/543-6944.

**Fractal Design Painter 3.1 Unleashed**
Denise Tyler explores every one of Painter's tools and explains how artists can best use them. She covers how to create custom brushes, add special effects, and create QuickTime movies. Special sections cover cartoon animation, Kai's Power Tools, texture mapping, scanning, and printing. The CD-ROM includes plug-in filters, images, and reference tools. 960 pages. $49.99. Sams Publishing, 317/581-3500, 800/428-5331; fax 317/581-3550; **75677.720@compuserve.com**.

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"Six hell-princes surrounded us. Six monstrous mouths opened. Six monstrous throats emitted guttural screams. Twelve angry, red eyes burned at us in the dim light." You've played the game. Now read the novel. Inspired by Doom, this book doesn't provide tutorials, hints, or advice. Rather, Dafydd ab Hugh and Brad Linaweaver explore the deeper Urworld of the characters who inhabit your hard drive. This book is "the first chapter in a classic new space opera" based on the popular game. Rejoice or run for cover. 250 pages. $4.99. Pocket Books, 212/698-7000; 800/223-2336.

**Macworld's Creating Great Web Pages with HTML**
Want to join the teeming hordes venting their spleens, marketing their products, and showing off their dogs on the World Wide Web? Dave Taylor provides a step-by-step introduction to HTML-based Web design. He provides real-world examples, design principles, and marketing tips to help you design pages that get noticed. The floppy disk includes a Macintosh Web browser and Mac-specific tips and tricks. 250 pages. $19.99. IDG Books Worldwide, 317/596-5261, 800/762-2974; fax 317/596-5259; **dcunningham@idgbooks.com**. ■




*Fractal Design Painter 3.1 Unleashed*

To have your product considered for inclusion in *New Products*, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. *Macworld* reserves the right to edit all product announcements.


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**The Phaser 340 Color Printer.**
**So practical, it's brilliant.**

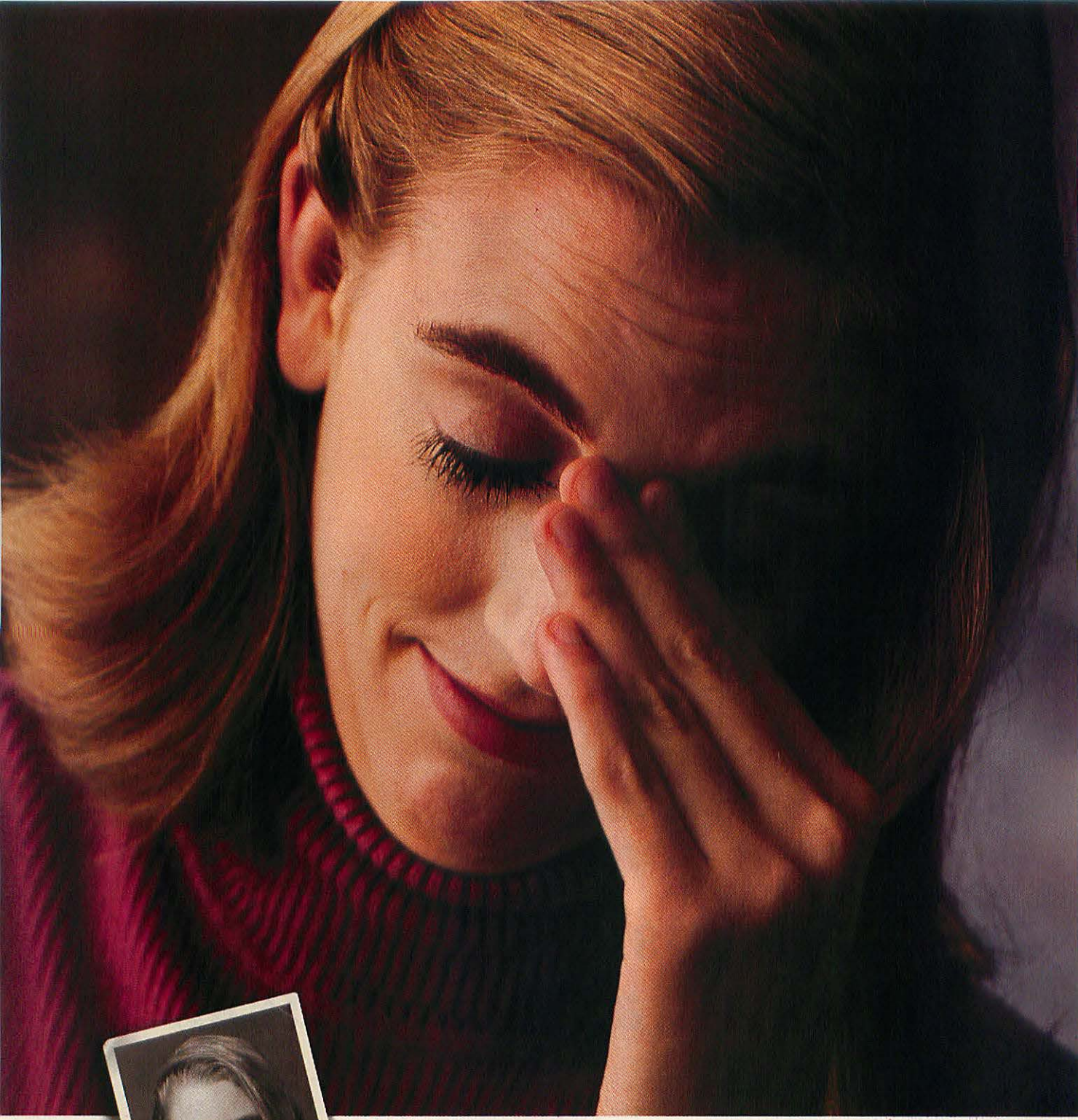


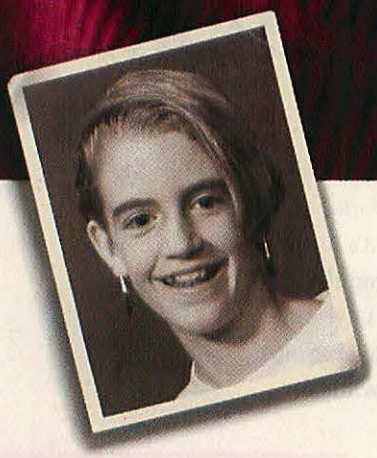
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Brittany Stromberg

*Dallas, Texas*

WRITER

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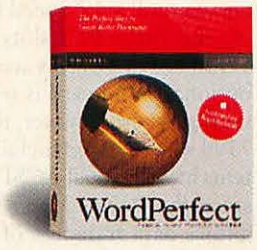
# Used to have a tin grin.

# Used to dance the pogo.

# Used to use Microsoft Word.

Ask Brittany Stromberg about her past with Microsoft Word and she just shakes her head. "I never even use it anymore," she says. "The interface really bugged me." Now she uses WordPerfect® for the Mac. It runs faster. Requires less disk space. And offers things Word simply doesn't. Like new version 3.5 with the ability to import and create your own Internet pages. Bookmarks for linking text. It'll even "speak" what you write. All good reasons to bury Word in the closet. Right next to those old prom pictures.

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# Reviews

# Power Macintosh 7500/100

**Desktop System**

**PROS:** Elegant design with easy access to RAM, VRAM, and PCI cards; built-in video capture; CD-quality sound capture and playback; processor on daughtercard allows future upgrade to PowerPC 604 chip. **CONS:** Software incompatibilities with Open Transport for some Internet configurations and Hewlett-Packard printer drivers.
**COMPANY:** Apple Computer (408/996-1010).
**COMPANY'S ESTIMATED PRICE:** $3159 (for reviewed system).

MW ★★★★



ROBERT PERRY/SCREEN IMAGE; IMAGE BANK

I'VE LOOKED LONGINGLY at each new Macintosh from Apple for the past several years. But they've all fallen short: too hobbled by emulation, too difficult to upgrade, too expensive. The new Power Macintosh 7500/100, however, provides just the right mix of speed and features, with room to grow.

For around $2700, the 7500/100 we tested has all the essential hardware. It consists of a 100MHz PowerPC 601 processor, an optional 256K Level 2 cache, 16MB of system RAM, a 500MB hard drive, 10BaseT and Apple AUI Ethernet connectors, a 4X-speed CD-ROM player, and three PCI slots. A 7500 with a 1GB hard drive costs around $3000. The optional cache card is not included with most models; however, the version of the 7500 we tested did include one. Both systems have the dual-SCSI buses we've seen since the Power Mac 8100/80: one bus allows data transfers of up to 5MB per second, the other allows data transfers of up to 10 MBps.

The 7500 is competitively priced when compared with all of the other Macintoshes available now. A comparably equipped 8100/100 costs about $3200, and Power Computing's Power 100 costs about $3150. The Power Mac 8500/120 adds video-out and a 604 processor for about $4000.

And if a lower price isn't enough of an advantage, a 7500 with the optional cache card installed is slightly faster than a Power Macintosh 8100/110. More PowerPC-native code in Mac OS 7.5.2, faster caching, and a faster storage subsystem give the 7500 its speed boost. For instance, in a Microsoft Excel scroll test, the 7500 took 11.9 seconds versus the 8100/110's 14.5 seconds because of reduced system overhead. Likewise, rendering a file in Specular International's Infini-D took 149 seconds on the 7500 compared with 188 seconds on the 8100—a 21 percent time savings. The 7500's better caching saves it 9.2 seconds over an 8100/110 when printing a 385K Adobe Illustrator file as PostScript. And duplicating a 15MB file takes only 8 seconds on the 7500, just over half the time of the 8100/110.

Moreover, with the Power Mac 7500 there's room to expand. As with the more costly Power Mac 8500 and 9500, the 7500's processor is on a daughtercard, so in the future you can make your computer even faster with a 604 processor upgrade. Eight DIMM slots let you install as much as 512MB of system RAM. With 2MB of video RAM (VRAM), the standard 7500 supports 24-bit color on 16-inch monitors (832 by 624 pixels), but with additional VRAM, the 7500 can display 24-bit color at 1024 by 768 pixels or 16-bit color at 1280 by 1024 pixels. And the 7500 has room for another 3.5-inch drive, such as a removable-cartridge drive.

## Sound and Vision

Although there is no *AV* in its name, the 7500 has both RCA and S-Video connectors for capturing video, and stereo RCA connectors for recording and playing sound. However, the 7500 lacks video out, so it is inadequate for most desktop video studios. Furthermore, native capture rates to the internal drive are a relatively slow 15 frames per second at 320 by 240 pixels.

Apple engineers have achieved rates of 20 to 25 frames per second, at 320 by 240 pixels, on fast hard drives, those capable of data transfers over 4.5 MBps. To capture movies with higher resolutions at this rate or at higher rates, or to record movies you've created on videotape, you need a PCI video-capture card from Data Translation or RasterOps' Truevision division. These cards cost several thousand dollars each, and I was unable to find any company planning a low-cost data-capture or playback board for PCI Macintoshes. Nevertheless, you can capture still frames at 640 by 480 pixels, and the 7500 can also beautifully capture and play back 16-bit 44kHz CD-audio through minijacks or RCA jacks.

Although professional AV systems are more appropriate for commerical applications, the 7500's audio and video processing abilities are perfect for personal publishing over the World Wide Web, or for inclusion in a disk-based business presentation. The Power Mac 7500 comes with Avid VideoShop, a straightforward video-editing program. VideoShop lets you capture video and sounds, and combine multiple tracks into your own personal *Citizen Kane*.

The 7500's video capabilities also pave the way for future advances in videoconferencing. Apple provides QuickTime conferencing software that lets you have a videoconference over office or school networks. You will, however, need a couple of cameras, and a friend, to share in this ability.

## Admiring the Wares

Apple has shipped the 7500 with a pile of new or updated software. The popular Power Strip utility for Macintosh notebook computers is now bundled as Control Strip, letting you change monitor settings, network connections, and file sharing from your desktop. A new Sound and Display control panel puts all audio and video services under one (scriptable) interface—complete with a graphical map of your devices. You may want your Macintosh to moonlight as a voice-mail system with the combination of Apple's telecom software, Cypress Research's MegaPhone, and a GeoPort modem. Because the software cannot be used with ease remotely, people who spend a lot of time on the road will want to stick with their old messaging system. Lotus Notes Express, a limited version of Notes, offers group E-mail, as well as collaboration and customer-tracking services for businesses.

Naturally, the Power Macintosh 7500 includes Apple's recent big-ticket system software improvements such as QuickDraw GX for graphics and printing, PowerTalk and Open Transport for electronic mail and network communication, PlainTalk for speech and computer-voice control, and AppleScript for automating tasks. Unfortunately, Open Transport is incompatible with MacPPP or SLIP for some Internet configurations (for more details, see "Open Transport Still Falls Short," in *Networks* news, elsewhere in this issue). Due to a change in the speed of the PCI Power Macs' serial ports, owners of Hewlett-Packard printers may have problems printing unless they use the LaserWriter 8.3 driver. HP is working on new drivers that correct the problem.

The most interesting new software included with the 7500 is QuickDraw 3D. Although there isn't much to the few demonstration programs Apple installs (watching gerbils ride rollercoasters is only fun for a few minutes), Apple has created tools that make it fairly easy to manipulate 3-D models, and developers seem genuinely enthused about QuickDraw 3D. Currently, only applications such as modelers and renderers that already use other 3-D interfaces and programming techniques are incorporating QuickDraw 3D, so you may wait months before seeing finished programs that use it in more innovative ways.

## Open and Shut Case

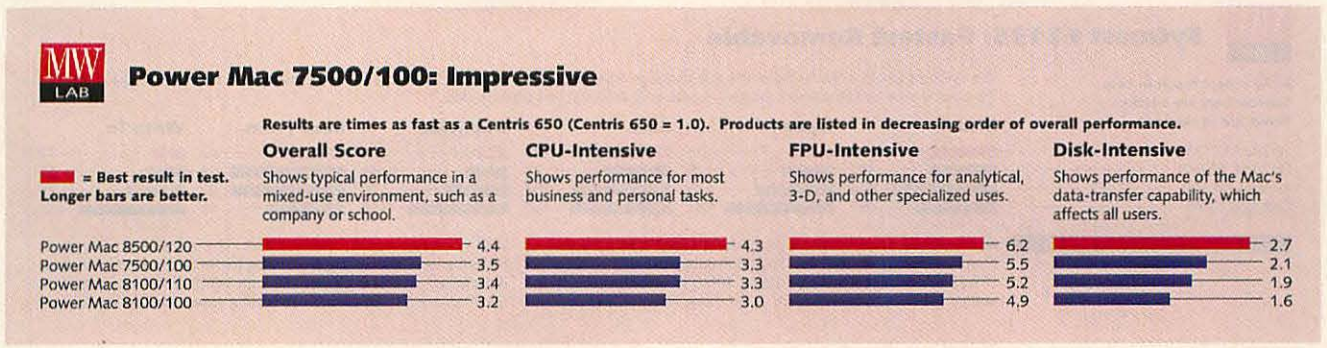
Apple engineers must have been reminiscing about the simple, snap-together designs of the Mac IIcx and IIci as they designed the 7500's case. The 7500 provides easy access to system RAM, VRAM, and PCI cards. To remove the case, you simply push two tabs beneath the bezel on either side of the 7500's front panel and tug the case forward. The release mechanism is not very precise, so patience and a little elbow grease are required. Also, it's easy to misalign the case slightly when putting it back together. At least Apple has gotten rid of those little metal tabs whose sole purpose seemed to be cutting people's fingers.

Although the 7500 looks jam-packed inside, the contents swing out like a set of window shutters. A plastic flap that secures PCI cards swings up and out on the left side, and a hinged chassis that supports the drives and power supply lifts out easily on the right. A cleverly designed plastic kickstand supports the weight of the swinging chassis, stopping the Mac from toppling over sideways.

Once the case is open, the Mac's motherboard is fully exposed. Slots for system RAM, VRAM, and the ROM are within easy reach—a vast improvement over the design of the Centris 650, Quadra 650, and Power Mac 7100, which require major surgery for something as simple as adding RAM.

## The Last Word

With the Power Mac 7500/100, Apple has created a computer with flexibility and power in an elegant, expandable design, all at a good price. Strong video, sound, and networking capabilities make it an excellent machine for Internet browsing and publishing. And the 7500's speed will help keep large and small businesses running smoothly for years. I think the 7500/100 is such a well-rounded machine, I plan to buy one.—TIM WARNER



# EZ135

**Removable Drive**

**PROS:** Currently the fastest removable drive available; easy setup; excellent selection of bundled software. **CONS:** Awkward cartridge insertion and removal; not compatible with existing removable formats. **COMPANY:** SyQuest Technology (510/226-4000). **LIST PRICE:** $249; cartridges $19.95 each.

MW ★★★★

THE WAR FOR DOMINANCE IN THE low-cost removable-drive market has begun, with SyQuest's new EZ135 drive competing head-to-head against Iomega's Zip drive (see *Reviews*, July 1995). Although the EZ135 wasn't first to leave the starting gate, SyQuest claims twice the speed, 35 percent more capacity, and twice the warranty period for its product.

## The EZ's Design

The EZ135 feels sturdier than the Zip drive. At just over 2 pounds (about twice the Zip's weight), it may be more of a burden to carry with a PowerBook and other accessories. Aside from the color, the EZ135's faceplate matches that of the SyQuest 105MB or 270MB drive.

SyQuest has overcome some of the Zip drive's shortcomings in the EZ135's design. For example, the EZ135's conventional SCSI ID selector switch offers the full range of 0 through 6 ID numbers (the Zip offers just two). Unlike the Zip, the EZ135 has an on/off switch and a pair of full-size 50-pin SCSI jacks (versus 25-pin jacks on the Zip). Finally, the EZ135 provides termination via a standard external plug (it's switchable on the Zip). Like the Zip, the EZ135 uses a heavy, external AC adapter block.

## The Cartridges

The EZ135 drive works just like the 105MB and 270MB SyQuest devices. You insert the cartridge, move the load/unload lever to the right, and wait about 10 seconds for the disk icon to appear on your desktop. In contrast, the Zip drive's disk-insertion and -removal process is the same as with a floppy drive, and the disk icon appears on the Mac's desktop just as speedily as with a floppy. The EZ135 is silent without a cartridge and whirs quietly when the cartridge is in use.

Dismounting the disk from the EZ135 (after you drag the icon to the Trash or use the Put Away command) is rather awkward. You press a stop (dismount) button, then manually move the load/unload lever all the way to the left to eject the cartridge. Unless you have really good finger dexterity, it's a two-handed process, because the drive tends to slide around as you move the lever.

The EZ135's cartridges resemble SyQuest cartridges used in the 105MB or 270MB drives, but the EZ135 media doesn't work with these drives. The cartridges are somewhat clumsy and must be stored in an insulated case, which makes for an awkward fit in one's shirt pocket. The Zip's ultrathick floppylike cartridge is more appealing in terms of looks and convenience. However, you get roughly 126MB of formatted capacity from the 135MB EZ135 cartridge, compared with about 94MB from the 100MB Zip media.

## The Fastest Removable Option

When it comes to speed, the EZ135 drive excels. In tests conducted by Macworld Lab, the EZ135 wasn't exactly twice as fast as the Zip drive, but it was close. In fact, it's faster than the SyQuest 270MB model, making it the fastest removable-cartridge drive Macworld Lab has yet tested. In general use, the EZ135 cartridge feels much more brisk than the Zip in every function, from writing large files to file-search and database-sort tasks.

## Included Software

The EZ135 comes with a collection of bundled software (again reminiscent of the Zip drive). La Cie's Silverlining Lite handles disk formatting and mounting chores and can also format regular hard drives. La Cie's Virtual Disk catalogs your disks, while DiskFit from Dantz is provided for backups. Unfortunately, DiskFit can only back up the disk on which it's installed (unless you install multiple copies, one for each drive you have).

For synchronizing files between your disks, there's a limited edition of PowerMerge from Leader Technologies. Xaos



GIBSON

Tools provides Paint Alchemy 1.0.2 (a set of Adobe Photoshop plug-ins), and an upgrade path to version 2.0. And there are two game demos, Bungie Software Products' Marathon and Pathways Into Darkness.

## The Last Word

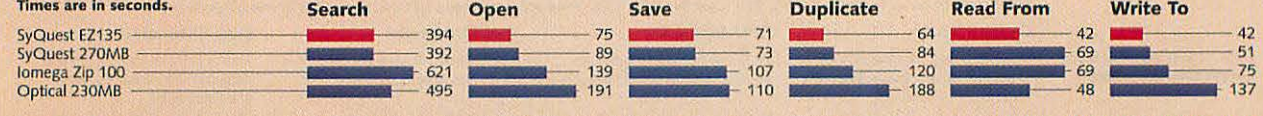
There are so many removable formats available now that selecting the right one is difficult. The EZ135 and Zip drives both fill the bill for archiving or transporting a small number of files. While the EZ135 is faster and has larger-capacity cartridges, the Zip drive is lighter and has more convenient cartridge handling and more appealing media. If you need top speed and large file-storage capacity, you may be better off with a fixed hard drive. To complicate matters, both Iomega and SyQuest are developing new removable drives that handle 1GB and more of storage space. Before you buy, consider your needs carefully. If a low-cost removable drive is what you want, you'll find that the SyQuest EZ135, while not glamorous, more than compensates for its lack of high-tech appeal with solid performance and decent storage capacity. It's definitely worth a second glance.—GENE STEINBERG

MW LAB

### SyQuest EZ135: Fastest Removable

**= Best result in test. Shorter bars are better. Times are in seconds.**

The SyQuest EZ135 is the fastest removable-cartridge drive yet, besting even the SyQuest 270MB by writing data faster to the disk. Iomega's Zip drive is slow by comparison, primarily because of slower access times to data.




**BEHIND OUR TESTS**

Macworld Lab tested portable drives using a set of everyday tasks. A search of a 96,775-record 4th Dimension database indicates the effect of fast access. Opening and saving a 20MB Photoshop file with the scratch disk set to the mechanism tested shows how the drive performs with numerous small data transfers. The remaining tests show performance when reading and writing files in the Finder. Mechanisms were tested on a Mac Centris 650 with 16MB of RAM running Mac OS version 7.5.—**Macworld Lab testing supervised by Tim Warner**

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*Scanned at 2700 dpi in 30 seconds*
*Photo by Phillip Porcella*



MacUser ★★★★

MW ★★★★

Polaroid
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# LaserWriter 4/600 PS

**PostScript Laser Printer**

**PROS:** Offers 600-dpi resolution for less than $1000; limited to one paper-input source; Energy Star compliant; compact. **CONS:** Limited paper handling; easy to get a paper-jam message when adding paper. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** $929.

MW ★★★★

NOT SO LONG AGO APPLE'S STYLEWriter was the only option for home computer users who had not yet won the lottery. Back then, slower performance and reduced resolution were a small price to pay for a printer with a small price. Times, however, have changed, and today, for less than $1000, you can buy a printer that offers 600-dpi resolution, takes up only a little more space on the desktop than a StyleWriter, and doesn't dim your desk lamp when printing.

Apple's new LaserWriter 4/600 PS doubles the resolution of its predecessor, the 300-dpi Personal LaserWriter 320, and costs less to boot. The LaserWriter 4/600 PS comes with 2MB of RAM, is upgradable to 6MB, and offers 64 PostScript and TrueType fonts. Like the Personal LaserWriter 320, the 4/600 PS handles 100 sheets of paper and accommodates A4, B5, executive, legal, and letter sizes.

Unlike the Personal LaserWriter 320, though, the LaserWriter 4/600 PS doesn't support Apple's most ingenious image-enhancement technologies: FinePrint and PhotoGrade. That's not a bad thing, however; the LaserWriter's 600-dpi resolution makes such fancy image enhancements unnecessary. The LaserWriter 4/600 PS prints sharp, black text and beautiful gray-scale images in which even subtle details appear clearly.

The printer's 4-pages-per-minute engine puts it roughly on par with its predecessor, but the 4/600 PS is no speed demon. Its nearest competitor, Hewlett-Packard's HP LaserJet 5MP ($1299), which offers 600 dpi and a 6-ppm print engine, significantly outperformed it: the HP printed a 7-page Word 6.0 document with a variety of fonts, sizes, and styles in an average of 156 seconds, versus the LaserWriter 4/600's 255 seconds; and a complex graphic created in Illustrator 5.5 with special PostScript effects, including nonlinear blends and Bézier curves, printed in 396 seconds on the HP versus the LaserWriter's 438 seconds. But it's hard to get too annoyed about waiting an average of an extra minute and a half per document when you get gorgeous-looking documents from the 4/600 PS at a price point unimaginable even a year ago. And upgrading the 4/600 PS to 6MB of RAM will improve its performance.

This Apple printer excels where Apple's products generally do—in product design. It's foolproof to set up, the manual is clear and easy to follow, and the toner cartridge snaps into place in an easy-to-reach front-loading design. What's more, the printer's compact size (6.3 by 15.2 by 14.9 inches) means it takes up only a little more room on my desk than the trusty StyleWriter; while the LaserWriter is roughly twice the depth of the StyleWriter, it is only a fraction of an inch wider. You can select either face-up or face-down delivery by flicking a lever on the back. Face-down delivery stacks the paper in order at the top of the printer; face-up delivery shoots the paper out the back and is best for thick paper or envelopes and transparencies.

Oddly, there's no on/off switch; instead, the printer's energy-conservation feature automatically shuts off most functions when they aren't in use and wakes up the printer when you print a document. If you can stand one more ever-present green light in your home, it's a neat scheme, and Apple claims that the 4/600 PS draws about the same amount of power as a night-light.

My only complaint with the printer's design is quite minor. When you add paper in the middle of a print job, you must pull the paper tray all the way out of the printer. Sliding it halfway out and adding paper convinces the printer that there's a jam, even when there isn't. Though inconvenient, this is easy to deal with; the LaserWriter 4/600's design makes jams simple to find and fix—a real plus when you're home alone without the ubiquitous helpful office nerd to disassemble the printer and extract an errant sheet.

Like the Personal LaserWriter 320, the LaserWriter 4/600 lacks a parallel port (commonly used to connect to DOS PCs) and doesn't accept a second paper tray (handy for letterhead). You can, however, use the included LaserWriter Bridge software to share your LaserWriter 4/600 over an EtherTalk or TokenTalk network (as long as you've got the appropriate transceivers and cables) by connecting it to a host Macintosh. Of course, the usual built-in support for LocalTalk makes it easy to connect the printer to other computers and devices.



SUZANNE ROADY

## The Last Word

The LaserWriter 4/600 PS is easy to set up and maintain, is compact in design, and offers great-looking, high-res printing. For all but the most nomadic graduate students, the printer is a great addition to any home office. Performance fanatics, those who require two paper trays, and those who want to share their printer with a PC should consider the HP LaserJet 5MP.—LIZA WEIMAN

## MW LAB How Fast Is the Apple LaserWriter 4/600 PS?

**= Best result in test. Shorter bars are better. Products listed in decreasing order of overall performance. Times are in seconds.**

**Multiple Fonts** — Print speed for a typical 7-page Microsoft Word 6.0 document with a variety of fonts, sizes, and styles.

**Single Font** — Print speed for a 20-page Word 6.0 document with double-spaced 12-point Courier text in plain, bold, and italic.

**Illustrator 5.5** — Print speed for a complex graphic with special PostScript effects. Our illustration included nonlinear blends and Bézier curves.

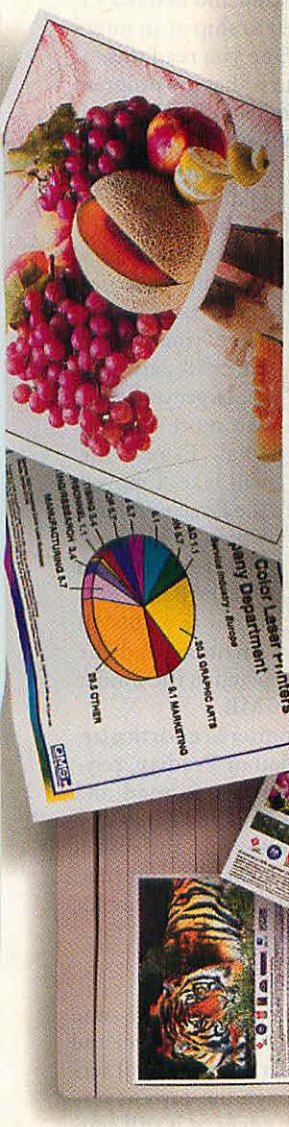
**PageMaker 5.0** — Print speed for a 4-page newsletter with several fonts, 2 PICT images, an EPS graphic, and a gray-scale TIFF image.

**TrueType** — Print speed for a 2-page Word 6.0 document containing 5 TrueType fonts.

| | Multiple Fonts | Single Font | Illustrator 5.5 | PageMaker 5.0 | TrueType |
|---|---|---|---|---|---|
| Apple LaserWriter Pro 630 | 135 | 170 | 310 | 124 | 53 |
| HP LaserJet 5MP* | 156 | 228 | 396 | 193 | 49 |
| Apple LaserWriter 4/600 PS* | 255 | 331 | 438 | 275 | 71 |

*All printers tested at 600 dpi. * With AppleTalk*

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**Circle 288 on reader service card**

# Claris Emailer 1.0

**E-mail–Management Program**

**PROS:** Automates many E-mail transactions; universal address book; easy to set up and use. **CONS:** Inadequate control over PPP Internet connections; no Save As command; Filing Cabinet needs improvement. **COMPANY:** Claris (408/727-8227). **LIST PRICE:** $89.

MW ★★★

CLARIS EMAILER IS THE first program that lets you manage your E-mail on multiple online services, and it greatly eases the burden of dealing with a flood of messages. *It completely* replaces the E-mail functions of several online services' proprietary client software, allowing you much better—and much easier—control over your E-mail.

The main window, the Browser, uses tabs at the top that let you switch between the In Box, Out Box, Filing Cabinet, and Address Book. The In Box and Out Box are list views with resizable columns for mail status, date, message subject, and addressee. The Filing Cabinet stores your mail in folders; the program comes with folders called Read Mail, Sent Mail, and Deleted Mail, and you can add as many personal folders as you like.

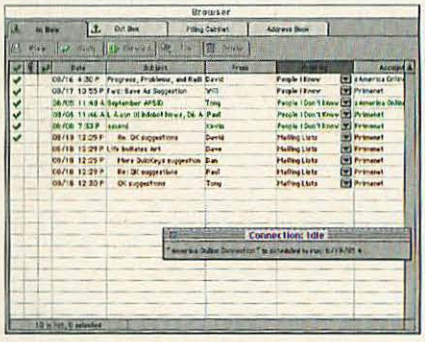
Emailer 1.0 supports mail on America Online, CompuServe, eWorld, the Internet (with any SMTP or POP3 mail server), and RadioMail, a wireless mail service. Emailer can send and receive mail on any of these services automatically, using the Schedules feature. You create schedules for one online service or a combination of services, and set each schedule to run on a specified day (or days) at a certain time. You can also set up schedules to connect at specified intervals throughout the day. Emailer includes communications tools that access all the supported services over the Internet, so you can check mail on all your online services with one phone call.

## Setup Is Easy

There are several steps necessary to set up your accounts on the various E-mail services; Emailer's Easy Setup prompts you to enter the account data needed for Emailer to connect with each service.

Sending and receiving mail is a snap. You add recipients to a new message by typing the first few letters of their name; if they're in your Address Book, Emailer fills in the rest of the name and the preferred E-mail address. You can also address mail as CC (carbon copy) or BCC (blind carbon copy). To add a file enclosure to a message, you drag the file's icon onto the message form, and Emailer encodes the file so the destination service can read it. You can also have Emailer compress the file using Aladdin Systems' StuffIt technology.

Perhaps the best feature is the unified Address Book, which allows you to enter all of a person's E-mail addresses. You can specify which is the default choice, so it's easy to accommodate friends who, say, prefer to get mail on an Internet account rather than via CompuServe or America Online. It's wonderful to have just one address book for all your E-mail correspondents, instead of entering names into separate address books for each online service. Emailer imports your existing address books from America Online and eWorld, CompuServe Information Manager, Qualcomm's Eudora, or any tab-delimited file.




**Incoming** Here's a small sample of my prioritized mail: first comes mail from senders in my address book; then other mail from individuals; then mail from the Internet mailing lists I subscribe to.

Mail Actions, known as filters in some E-mail programs, can automatically sort mail by priority, file messages in different folders, forward mail, and send a return message. For example, I've given the people in my address book a higher priority than those I don't know, so that I read incoming mail from my friends first. If you get junk E-mail, you can file it in Deleted Mail automatically. However, the Mail Actions feature needs to be more powerful. You can only perform one action on each piece of mail—so you can set a priority for a message or have Emailer file it automatically, but not both.

Emailer makes good use of the Mac's drag-and-drop capability. You can select text in a message and drag it to another application that accepts draggable text, such as SimpleText, ClarisWorks 4.0, or even the Finder; dragging text from Emailer onto the desktop creates a clipping that you can later drag onto another application's document window. You can also add people to your address book by dragging the address from the header of the message and dropping it onto the Address Book tab. Likewise, you can add members to a group by dragging entries from the Address Book to the Group window.

## Static on the Line

As good as it is, there's room for improvement. For example, Emailer is not scriptable, so advanced users can't extend Emailer's capabilities. There's no Save As command to save mail as text files for easy transfer to other programs. Group addresses are not linked to individual records, so you must update each instance of an address manually. For TCP/IP Internet connections, Emailer does not control MacPPP; you must make the Internet connection manually, so automatic timed connections to the Internet are difficult or impossible for most people. A Save As command and better PPP control are scheduled to ship in an interim upgrade by the time you read this.

Another problem is that the program stores messages as individual files; if you get a lot of mail, you'll quickly have hundreds of small files taking up space on the hard disk. Hard disks allocate space in a minimum size that's based on the size of your disk, or hard disk partition; the larger your disk, the more space a small E-mail file will take. I moved the Emailer folder, which held about 700 messages, from a 700MB disk partition to a 200MB partition, and the size of the folders reported in the Finder went from 17MB to 7MB.

Emailer doesn't interface particularly well with MCI Mail or Prodigy, relying on Internet gateways to send and retrieve mail. QuickMail and FirstClass users may also be left out in the cold if their systems aren't on the Internet. Claris should include better support for them in its next release.

## The Last Word

Claris Emailer offers an impressive suite of E-mail features at a good price, and its ability to deal with multiple mail services is unique. Though the current version has some rough edges, it is still eminently usable, and has become one of the programs I use daily. If you want to deal with your E-mail more efficiently, Emailer is a great choice.—TOM NEGRINO

Introducing Windows 95.
It lets you drop files anywhere
you want on the desktop.

Imagine that.



# Typhoon 8

**Workgroup Printer**

**PROS:** Excellent image quality at 1200-dpi setting; relatively easy setup; high-quality fax capability. **CONS:** Expensive compared with the competition; dense manual; average print speed; mediocre 600-dpi print quality. **COMPANY:** Dataproducts (818/887-8000). **LIST PRICE:** 600-dpi model (4MB of RAM) $3100; 1200-dpi model (36MB of RAM) $5199.

MW ★★★

THE DATAPRODUCTS TYPHOON 8 IS a compact workgroup printer that offers up to 1200-dpi output, support for 11-by-17-inch (ledger) paper with full-bleed (edge-to-edge) printing, the capability of adding an extra paper tray, and more. The printer simultaneously accepts Adobe PostScript Level 2 and PCL 5 jobs (for PC users). In addition, there's support for PostScript faxing, so you can easily fax your completed work as simply as you print a regular document.

If your work site consists of Macs, PCs, and even Unix workstations, you can use Dataproducts' virtual printer technology to share the unit seamlessly among all of these platforms. Virtual printing allows you to create up to 64 printer profiles (which appear as separate entries in the Chooser on your Mac), representing network connections, paper-tray options, and other setup considerations. The user simply chooses the profile that suits the job at hand, and the printer switches configurations without skipping a beat.

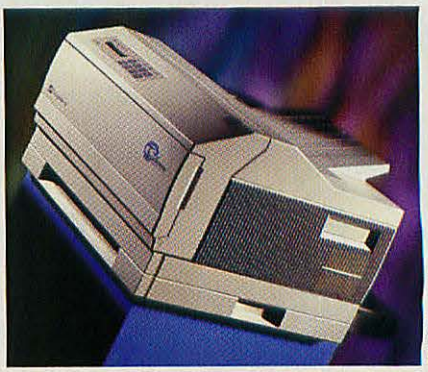
The printer uses an 8-pages-per-minute Fuji-Xerox print engine and a 25MHz IDT RISC CPU. A memory buffer allows the printer to process one job while imaging another. The printer also uses some of Adobe's newest PostScript technologies, such as the Adobe Memory Booster, which improves memory management, and Adobe's IntelliSelect, a protocol-switching technique that allows the unit to switch automatically between PostScript and PCL jobs.

Although the manual is somewhat complex (it's written with systems administrators in mind), installation of the printer is relatively simple. If you've ever installed a laser printer before, you should have this unit working in minutes.

*Macworld*'s test printer was the high-end model, maxed out with 36MB of RAM and Ethernet capability. You need this amount of RAM to access the printer's 1200-by-1200-dpi print resolution. The printer engine's native resolution is 600 by 600 dpi; it uses both hardware and software tweaks to obtain a higher resolution capability. While print speed suffers somewhat in the 1200-by-1200-dpi setting, it's not a serious drawback, and you'll want to consider this option to get the best print quality. A third resolution setting provides edge enhancement to the 600-by-600-dpi output, but I wasn't able to see a difference in the result, so I did not use this setting for my regular work.

Output quality is a mixed bag. At the standard 600-dpi setting, print quality wasn't quite as clear and crisp as that of the Apple LaserWriter Pro 630. But at 1200 dpi, the Dataproducts printer shines. Text was crisp and sharp, though not noticeably better than the Apple printer's at 600 dpi; halftones were noticeably superior, with good tonal range. They were also relatively free of moirés and other unsavory artifacts.

Printer speed was nothing to write home about, however. While it bettered the LaserWriter Pro 630 at the 600-dpi setting, the Typhoon 8 was in the bottom third of the pack compared with other workgroup printers Macworld Lab has tested (see "Top Office Printers," *Macworld*, June 1995). At 1200-dpi resolution, though, the Typhoon 8 was just a tad faster than the Apple printer at 600 dpi.



ROBERT PERRY

Dataproducts' PostScript fax attachment made me wish all printers could send faxes directly. There are no system extensions and conflicts to worry about, and if the recipient has a PostScript printer with its own fax adapter, you can send documents with placed (imported) EPS files and have them appear at the same resolution as your text output (QuickDraw-based fax modems handle EPS images poorly). The fax adapter uses Apple's Level 2 PostScript fax driver; it works well in most respects but lacks the fancy address-book and batch-file capabilities of dedicated fax-modem software.

## The Last Word

In its high-resolution setting, the Dataproducts Typhoon 8 offers top-notch output. Performance is decent. The printer has a compact footprint (making it ideal for a small office) and flexible installation options for mixed-platform environments. But fully outfitted, it costs over five grand, a bit pricey compared with some other printers in its class. When shopping for a workgroup printer, you'll also want to check out the two printers that received Editors' Choice ratings in June's "Top Office Printers" feature, the 1200-dpi Lexmark Optra Lx and the 600-dpi Hewlett-Packard LaserJet 4MV. Still, the Typhoon 8 is definitely a worthy contender.—GENE STEINBERG

MW LAB

### How Fast Is the Dataproducts Typhoon 8?

**All printers tested at 600 dpi except where noted.**

**= Best result in test. Shorter bars are better. Products listed in decreasing order of overall performance. Times are in seconds.**

| | Multiple Fonts<br>Print speed for a typical 7-page Microsoft Word 6.0 document with a variety of fonts, sizes, and styles. | Single Font<br>Print speed for a 20-page Word 6.0 document with double-spaced 12-point Courier text in plain, bold, and italic. | Illustrator 5.5<br>Print speed for a complex graphic with special PostScript effects. Our illustration included nonlinear blends and Bézier curves. | PageMaker 5.0<br>Print speed for a 4-page newsletter with several fonts, 2 PICT images, an EPS graphic, and a gray-scale TIFF image. | TrueType<br>Print speed for a 2-page Word 6.0 document containing 5 TrueType fonts. |
|---|---|---|---|---|---|
| HP LaserJet 4MV | 51 | 104 | 244 | 62 | 37 |
| Xanté Accel-a-Writer 8200 | 58 | 104 | 256 | 61 | 39 |
| Lexmark Optra Lx | 65 | 129 | 263 | 91 | 55 |
| Xanté Accel-a-Writer 8200* | 102 | 123 | 268 | 95 | 41 |
| Dataproducts Typhoon 8 | 87 | 180 | 273 | 106 | 45 |
| Dataproducts Typhoon 8* | 119 | 180 | 270 | 135 | 47 |
| Apple LaserWriter Pro 630 | 135 | 170 | 310 | 124 | 53 |
| Lexmark Optra Lx* | 112 | 188 | 346 | 158 | 67 |

*At 1200-dpi resolution.

Introducing Windows 95.
It has a trash can you can open
and take things back out of again.

Imagine that.



# Authorware Professional 3.0

**Media Authoring Program**

**PROS:** Icon-driven design minimizes scripting and repetitive labor; good integration with Director; cross-platform support; excellent text support; broad selection of ready-to-use media elements; thorough documentation; excellent bundled software. **CONS:** Expensive; not Power Mac native; no Window menu; can't create antialiased text. **COMPANY:** Macromedia (415/252-2000). **LIST PRICE:** $4995.

MW ★★★★

WHEN MOST PEOPLE THINK OF A multimedia authoring package, they think of Macromedia Director. Director is a top tool for creating interactive titles, but it isn't the ideal program for every project. Its support for text is minimal, and you need to do a fair amount of scripting to accomplish many tasks.

Many of Director's limitations stem from its beginnings as an animation program. Authorware, Macromedia's top-of-the-line authoring tool, has a different heritage. Originally designed to help educators create interactive educational software, Authorware is easier to learn than Director and far better suited to education-oriented projects. And the enhancements in version 3.0 let you combine its strengths with Director's.

## Follow the Flowline

In Authorware, you connect icons into what the program calls flowlines; these depict the flow of the project and the relationships between its elements. Authorware provides a variety of icons: some cause the project to branch to different areas, while others display QuickTime movies, play sounds, perform calculations, move objects, and more.

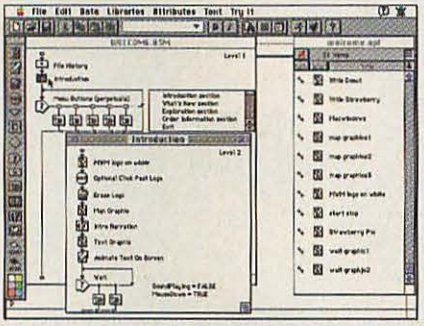
Some icons hold entire flowlines of their own—for instance, a flowline that displays both a background-graphic icon and a text icon might also contain an icon that leads to a flowline displaying animated navigation buttons. Each flowline appears in its own window. Alas, Authorware doesn't provide a Window menu for quickly activating a particular window.

Version 3.0 provides a new Framework icon. Like a master page in a page-layout program, the Framework icon lets you specify that certain elements, such as background graphics and navigation buttons, repeat on each screen. It's a tremendous time-saver for projects or for portions of them.

The Framework icon teams up beautifully with Authorware's new ability to import text files saved in Rich Text Format (RTF). Say you have a five-screen segment whose screens contain paragraphs of text. Create and format the text in a word processor that can export RTF files, inserting a page break where you want each new screen to begin. Import the RTF file into Authorware, and the program creates a new screen each time it encounters a page break, adding the elements in the Framework icon as it goes. No other authoring program makes creating multiple screens this easy. The new built-in spelling checker is a plus, too.

Authorware 3.0's text-handling features don't stop there. A hot-text feature lets you link words or phrases and other elements—click on a word to branch to another screen, for example. Combine this with Authorware's outstanding text-searching features, and you can create searchable, hypertext-linked electronic books without writing a single script.

A new Navigate icon makes it easier to set up branches from one portion of a project to another. You can use it to go from one screen to the next, to jump back to the most recently displayed screen, to display a dialog box listing recently viewed screens, or to display a Find dialog box that lets you search for text.



**Go with the Flow** In Authorware, you create a project by connecting icons into flowlines. In this project, a flowline window named Introduction appears when you double-click on the icon named Introduction. The library window on the right side of the screen stores the names of media elements.

Another great new feature lets you assign keywords to nontext items such as movies or sounds. Combine this with the Find dialog box, and users can search for these items with keywords.

As befits a program originally designed for educators, Authorware has features for creating quizzes and tracking users' performance. It even tracks the percentage of correct and incorrect answers.

## Design and Delivery

Authorware provides a set of rudimentary drawing tools—for lines, boxes, polygons, and ovals—as well as a text tool. But it can't create antialiased text. For that you need a third-party program such as Adobe Photoshop. Authorware also has extremely limited animation features. Version 3.0 can import and play Director animations, however.

A variety of debugging features let you run a project from a particular point and trace its execution while monitoring the values of your icons and variables. You can save a completed project as a stand-alone application that you distribute to others. Unfortunately, Authorware can't create native Power Mac applications, nor is Authorware itself a native Power Mac program. Authorware 3.0 is available for Windows, and the project file format is identical on both platforms.

Macromedia doesn't require royalties for distribution, but if yours is a commercial product, you must include a Macromedia copyright notice in your product's copyright screen and sign and return a distribution contract, along with two copies of your shipping product.

## The Last Word

At $4995, Authorware is the costliest Mac authoring program. (Director lists for $1195.) But you get a lot for your money. Authorware 3.0 arrives on a CD-ROM packed with interactive tutorials and hundreds of media elements: great-looking controls such as 3-D buttons, dials, and sliders; backgrounds and patterns; and best of all, a portfolio of extremely useful, documented routines that you can dissect and use in your own projects.

And there's more. When you return your registration card, Macromedia sends you a shelf-sagging software bundle that includes Fractal Design's Painter as well as several Macromedia products: the SoundEdit 16 audio utility, the MacroModel 3-D modeling program, and Director. (This bundle may change over time, so inquire before you buy.)

If you're getting started with multimedia and haven't equipped your software library, this bundle will get you well on your way. But if you already have these or equivalent programs, Authorware's $4995 price tag might be hard to swallow. Authorware is a superb program that can meet any authoring challenge, but Macromedia would sell more copies—and the world would see more great interactivity—if the program cost less.—JIM HEID

Introducing Windows 95.
It lets you use more than eight
characters to name your files.

Imagine that.



# Xerox 4510ps

**Laser Printer**

**PROS:** Proprietary printer driver supports useful features such as date- and time-stamping, banner pages, and smart underlining. **CONS:** Extremely slow performance; poor output quality. **COMPANY:** Xerox (800/349-3769). **LIST PRICE:** $1745; LocalTalk options $115.

MW ★★

XEROX'S ENTRY INTO THE COMpetitive field of small-workgroup printers, the 4510ps, has most of the basic features you'd expect—600-dpi resolution, cross-platform support, a print engine that can output at least 8 pages per minute, and a 200-sheet paper tray.

As with most recent laser printers, a RISC processor (an AMD Am 29200) handles the 4510ps's image processing. The Xerox 4510ps uses the same Fuji-Xerox print engine found in the capable LaserWriter Select 360, and the 4510ps ships with 6MB of RAM (expandable to 16MB). After testing the printer with an upgraded 10MB option, Macworld Lab spot-checked the 6MB version and found little difference in performance between the two. Although adding RAM to the 4510ps isn't as easy as upgrading the Lexmark Optra series (the 4510ps requires screws, the Optra doesn't), it's a straightforward procedure. In fact, installing the standard 72-pin SIMMs and the LocalTalk interface took less than ten minutes. Like the user manuals that come with Hewlett-Packard's printers, the 4510ps's manuals contain more information than you'll ever need—or want—to know. You probably won't need the installation manual, but it's nice to know it's there in case any problems do crop up.

If you have Macs and PCs, the Xerox 4510ps, like most recent printers, can handle both. It switches automatically between PostScript and PCL 5—a printer language that's more popular in the PC arena. Although you can print with either the standard LaserWriter 8 driver or the Xerox-licensed OnPage driver, Xerox encourages Macintosh users to opt for the latter. There's definitely an advantage in doing so, since the OnPage driver supports some of the 4510ps's best features. Among these are the ability to include banner pages, which identify and separate print jobs; a feature for date- and time-stamping output; and a smart-underline feature, which adds white space on each side of descenders to improve legibility.

The OnPage driver also lets you output up to 16 thumbnail pages on a single page. OnPage even allows you to create watermark images: you download the watermark file to a special folder in the system, then select that file to print over another file you're printing. OnPage supplies information about the fonts available on the printer. And finally, the driver lets you print to a PostScript file without a printer-prep file—a feature unlikely to be appreciated by the average user, but a boon for programmers who need to debug PostScript errors.

## Don't Wait Up

Though Xerox claims complex images are supposed to print faster with the OnPage driver, Macworld Lab tests showed that, in Illustrator and PageMaker, the OnPage driver printed much slower than the generic LaserWriter 8.2 driver (see "How Fast Is the Xerox 4510ps?"). Even using the LaserWriter 8.2 driver, we found the Xerox 4510ps to be one of the slowest 600-dpi printers Macworld Lab has tested recently.

Even worse, Macworld Lab could achieve the benchmarked speeds only by turning off the 4510ps's jam-recovery feature and not loading the printer-prep file. With default settings (including jam recovery on), the 4510ps managed only a dismal 4 pages per minute on the single-font test—a far cry from its advertised 10 pages per minute.

## Unimpressive Output

Speed may not be everything, but unfortunately, the 4510ps fared poorly in image quality too. Even with the help of TrueRes image-enhancement technology, the 4510ps's text output looked only marginally acceptable at 600 dpi. I have seen quite a few printers—such as the new HP LaserJet 5MP and even the discontinued LaserWriter Pro 630—with crisper-looking text than the 4510ps produced. Also, Macworld Lab found minor ghosting on printouts of images with dark backgrounds. Interestingly enough, when we printed multiple copies of the problem images, we found that ghosting occurred only with the first copy.



STEVE HATHAWAY

## The Last Word

Even with a well-written printer driver that supports some unique features, the Xerox 4510ps has neither the performance nor the quality to justify its $1745 price. If you need a workgroup printer for a small or medium-size network, you ought to consider a Hewlett-Packard or Apple model instead.—MARK HURLOW

## MW LAB How Fast Is the Xerox 4510ps?

**Best result in test. Shorter bars are better. Products are listed in decreasing order of overall performance. Times are in seconds. All printers tested at 600 dpi.**

| | Multiple Fonts: Print speed for a typical 7-page Microsoft Word 6.0 document with a variety of fonts, sizes, and styles. | Single Font: Print speed for a 20-page Word 6.0 document with double-spaced 12-point Courier text in plain, bold, and italic. | Illustrator 5.5: Print speed for a complex graphic with special PostScript effects. Our illustration included nonlinear blends and Bézier curves. | PageMaker 5.0: Print speed for a 4-page newsletter with several fonts, two PICT images, an EPS graphic, and a gray-scale TIFF image. | TrueType: Print speed for a 2-page Word 6.0 document containing 5 TrueType fonts. |
|---|---|---|---|---|---|
| Apple LaserWriter 16/600 PS | 63 | 101 | 241 | 79 | 41 |
| HP LaserJet 4M Plus | 85 | 124 | 246 | 90 | 45 |
| Apple LaserWriter Pro 630 | 135 | 170 | 310 | 124 | 53 |
| Xerox 4510ps w/True Res* | 151 | 333 | 329 | 184 | 43 |
| HP LaserJet 5MP w/AppleTalk | 156 | 228 | 396 | 193 | 49 |
| Xerox 4510ps w/True Res and OnPage driver* | 142 | 174 | 662 | 285 | 42 |
| Apple LaserWriter 4/600ps w/AppleTalk | 255 | 331 | 438 | 275 | 71 |

Unless otherwise noted, printers were tested with LaserWriter 8.2. **With jam recovery off; prep file not loaded.*

# Imagine this.



For people who don't use a Macintosh® computer, the most significant development in years has finally arrived. It's very big news. It's called Windows 95.

Yes, Windows 95 makes it easier for people to use their computers. It's a little more graphical. A little more intuitive. It even has a trash can.

In short, it makes a PC more like a Macintosh—you know, the Macintosh we built back in 1984. But compare a PC running Windows 95 to the Macintosh of 1995, and you'll discover a decade of difference.

**A new kind of power.**

In a recent independent study, for example, the RISC-based Power Macintosh™ 9500 outperformed a 120 MHz Pentium-processor-based PC running Windows by 63% on average. When running scientific and technical applications, the Power Macintosh advantage climbed to 80%. While for power-hungry graphics applications, the Power Mac™ was more than twice as fast.*



Why does the average person need this kind of power on his or her desktop? Because—as both Microsoft and Intel are quick to point out—graphics, multimedia and interactive media will play a huge role in the future of personal computing. What they *don't* point out, of course, is that Power Macintosh delivers the power you need for these advanced, processing-intensive applications, today.

**A computer you can use.**

Of course, all the raw power in the world is worthless if you can't use it. That's why every Macintosh is so easy to set up and use. That's why every new Mac™ includes an innovative help system that doesn't just answer your questions, but shows you what to do, where to click and what to type to get things done. And why we make it so easy to create Internet connections, install multimedia software and set up entire new networks from scratch.

**The way beyond multimedia.**

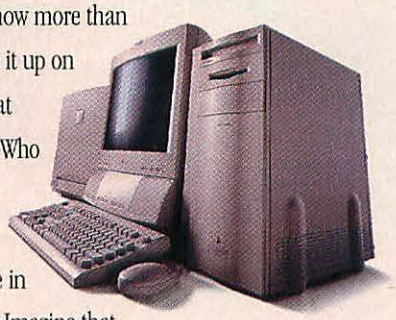
For many of the companies that design and manufacture PCs (or write operating systems for them), the biggest challenge of all is simply getting multimedia to work.



Meanwhile, ordinary people who turn on a Power Mac can do a lot more than run snappy new multimedia titles. They can create 3-D graphics, use voice recognition, videoconference across continents, even get started with virtual reality—all at the touch of a few keys and a click of a mouse. Because you can get these so-called "future" technologies in a Power Macintosh, today.**

**A new choice.**

The next time you hear the skeptics say, "But a Macintosh won't run the software we need," tell them this: There's now a Macintosh—the Power Macintosh 6100/66 DOS Compatible, to be specific—that runs everything a Macintosh can run, *plus* thousands of programs for Windows and DOS. Then, if they ask you about hardware compatibility, tell them how the PCI slots built into the new Power Mac accept standard PCI cards.



If they want to know more than that, tell them to look it up on the World Wide Web, at http://www.apple.com. Who knows, they just might get a peek at what Windows will look like in another decade or so. Imagine that.

*Big surprise, huh? For more ammunition to use against Windows fanatics, surf over to http://www.apple.com to see the results of independent testing by Competitive Assessment Services, 1995. **Some of these capabilities may require the purchase of additional software or hardware. © 1995 Apple Computer, Inc. All rights reserved. Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer, Inc. Mac, Power Mac and Power Macintosh are trademarks of Apple Computer, Inc. All Macintosh computers are designed to be accessible to individuals with disability.




Artwork created by Greg MacDonald of Seattle, WA on a Wacom graphics tablet using Adobe Photoshop 3.0 & Fractal Design Painter 3.1. Wacom Technology Corp. 501 SE Columbia Shores Blvd. #300 Vancouver, WA 98661 http://www.wacom.com
Wacom is a registered trademark and ArtPad II and UltraPen are trademarks of Wacom Co., Ltd. © 1995 Wacom Co., Ltd. All rights reserved. All other trademarks are properties of their respective companies. Whew!

# Adobe ScreenReady 1.0

**PostScript Image Rasterizer**

**PROS:** Unattended mode; automatically generates alpha channels. **CONS:** Antialiases bitmapped images to themselves; inconsistent dithering; buggy custom-color palettes. **COMPANY:** Adobe Systems (415/961-4400). **LIST PRICE:** $199.

MW ★★

ADOBE SCREENREADY IS DESIGNED to bridge the gap between PostScript and the world of bitmaps. It's a utility that essentially lets multimedia designers design with PostScript and then "print" to pixels, creating a PICT file.

ScreenReady includes two programs, ScreenReady for QuickDraw and ScreenReady PostScript. ScreenReady for QuickDraw works like a virtual printer. You select ScreenReady in the Chooser, choose Print from any application, tell ScreenReady where to save the finished bitmaps, and "print." ScreenReady PostScript, on the other hand, batch-processes all the EPS files in a selected folder and deposits the rendered images in a different folder. ScreenReady PostScript includes the same PostScript interpreter Adobe puts in PostScript printers.

Which program you use depends partly on the file to be processed. The rule of thumb is that if an application can render the file properly to the screen as a preview, then ScreenReady for QuickDraw is sufficient for processing. If the file includes elements like gradients, which render poorly in previews, then you need to go to the PostScript utility.

But these programs offer surprisingly different features, and users may find themselves betwixt and between when it comes to getting the feature set needed for a job.

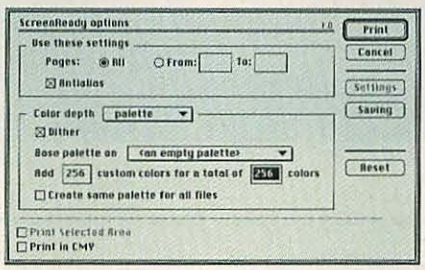
For example, ScreenReady for QuickDraw can dither graphics to custom palettes, or it can generate its own custom palettes and even superpalettes. ScreenReady PostScript can dither only to the System palette, to a gray-scale palette, or to black and white (1 bit). On the other hand, ScreenReady PostScript offers finer control over antialiasing than ScreenReady for QuickDraw does.

ScreenReady for QuickDraw can print a multipage document, but the PostScript program requires you to save each page as a separate EPS file before processing. On the plus side, you can set ScreenReady PostScript to run in the background and watch a certain folder—the program automatically processes any EPS file dropped into that folder. This is great for networked workgroups.

One nice feature both programs offer is the ability to render files with a precalculated alpha channel. This makes it a snap to select rendered graphics and antialias them to a new background—or to antialias titles to video backgrounds.

Still in its debut version, this package has some problems. My biggest complaint is with the overactive antialiasing function. In ScreenReady, antialiasing is always applied to both PostScript and bitmap art. So, for example, if you have an Adobe PageMaker file that includes text on top of a scanned photograph, ScreenReady not only antialiases the text to the background, it also antialiases any sharp lines *within the photograph*. Result: a blurry picture. Antialiasing of bitmaps would be a useful option, were it optional.

In version 1.0, ScreenReady's custom palette feature failed to work at times. The superpalette function isn't as robust as it should be (it has no base palettes),




**Virtual Printer** Selecting the empty-palette option causes ScreenReady to poll the images on each page of your file and create a custom palette based on the most common colors.

and is completely undocumented. It also consistently produced palettes with fewer colors in them than I asked for, which leads to images that are dithered more than need be. And ScreenReady repeatedly produced dithering errors when processing both bitmaps and Illustrator files embedded in PostScript documents.

### The Last Word

Despite these problems, ScreenReady may fill a gap in many people's multimedia production process. It will be useful for people who want to reuse existing documents and artwork. And ScreenReady fills a real need in the multimedia world by giving screen designers easier access to the full range of typographic and layout tools on which print designers rely. Let's just hope Adobe puts this particular product on an evolutionary fast track.

—JOE MATAZZONI

# Targa 2000 1.2

**Digital Video Board**

**PROS:** Excellent image quality; synced 16-bit audio; accelerated Premiere wipes and dissolves; knowledgeable and friendly tech support. **CONS:** Incompatible with Radius NuBus cards and Wacom tablets; no XLR audio connectors. **COMPANY:** Truevision (408/562-4200). **LIST PRICE:** $5495.

MW ★★★★

IF WORKING WITH DIGITAL video is more than a hobby, then you need a board like Truevision's Targa 2000. While there are less expensive video-digitizing boards available, they don't offer the Targa's combination of fine picture quality and fully synced 16-bit audio.

Truevision's board captures the requisite 640-by-480-pixel, 60-fields-per-second (fps) NTSC video, as well as the 25-frame, 50-fps PAL video rate. The Targa also provides built-in 16-bit audio; 24-bit, 1152 by 870 RGB graphics; and the ability to display a 24-bit, 640 by 480 image simultaneously on a computer and a TV monitor.

The board I tested accepts composite (VHS) and Y/C (Hi8 and S-VHS) video signals. Truevision recently released a $2500 YUV and RGB component option for high-end video; this option supports 720 by 486 NTSC and 720 by 576 PAL input and output.

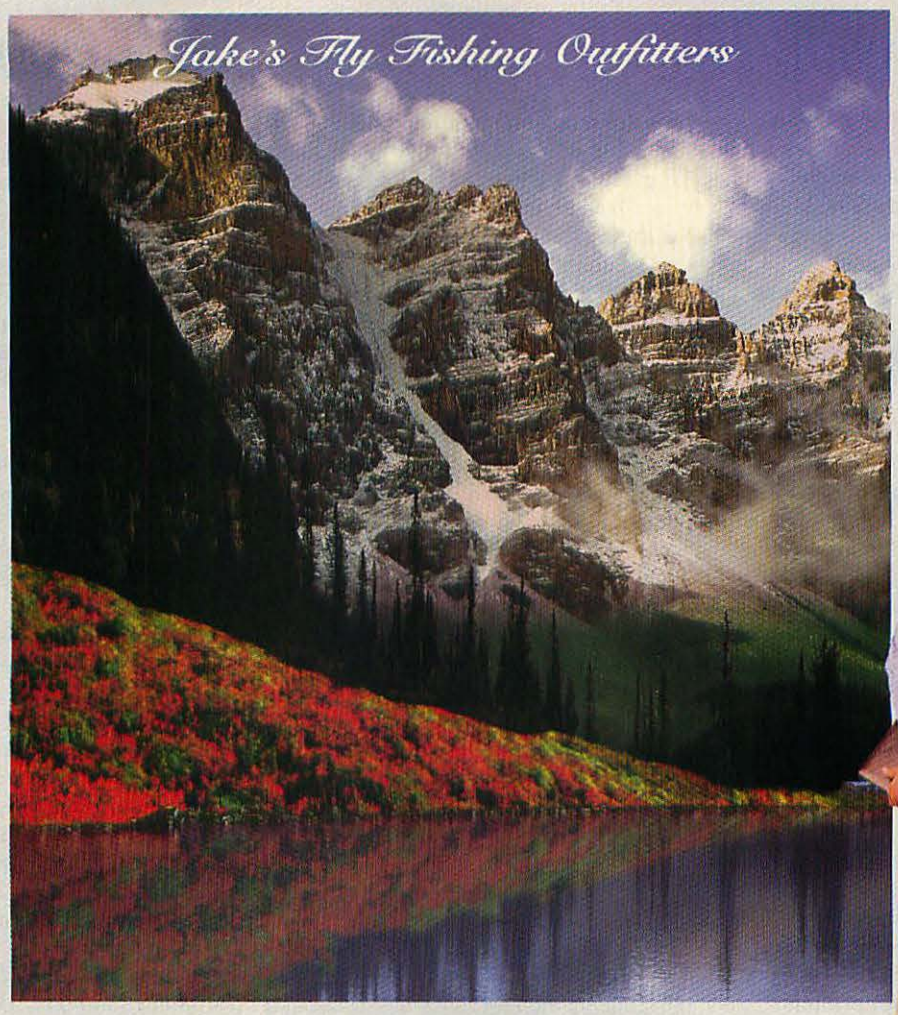
I ran Truevision's board in a variety of Quadra and Power Mac computers, each with 24MB to 64MB of RAM. I varied the quality of my Hi8, S-VHS, and Y/C Betacam SP source material because expertly lit and shot video doesn't stress a digital video system nearly as much as poorly produced camcorder shots. The Targa 2000 ate all the footage I fed it without any frame-dropping burps.

With a single SCSI-2 Fast drive, I captured good-looking full-frame 60-fps video at up to 4MB per second. Adding an Atto Silicon Express IV SCSI accelerator and two Seagate Barracuda drives upped the capture rate to over 6 MBps (200K per frame). The picture was stunning.

At any given data rate, the Targa 2000's picture had better color and saturation than Radius's VideoVision Studio. Both boards generated the same definition for complex scenes and sharp lines.

The quality of final images produced by any compression technology, includ-

*continues*






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For best results, use genuine HP supplies and accessories. See us at http://www.hp.com on the World Wide Web. Windows is a registered trademark of Microsoft in the U.S. and other countries. ©1995 Hewlett-Packard Company PE12567

# Introducing HP DeskJet 850 printers with the RealLife Imaging System.

$549
Estimated U.S. retail price.
Actual price may vary.



If a picture is worth a thousand words, HP DeskJet 850 printers say a lot about your business. HP's exclusive RealLife Imaging System gives your small office the most vivid colors and sharpest blacks possible in inkjet printing. You'll get outstanding results quickly and easily, with no special paper required.

- 6 pages-per-minute black and 1½ pages-per-minute color
- Mac and DOS/Windows compatible
- Designed for Windows® 95
- HP's new RealLife Imaging System delivers:
  - C-REt technology for precision printing
  - ColorSmart to optimize color automatically
  - New inks for superior results on any paper

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Just what you had in mind.

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ing Cinepak, is largely determined by the quality of the original image. The Targa 2000, by virtue of its fine captures, produced much better 320 by 240 Cinepak video than Radius's SpigotPower AV and slightly better Cinepak video than the VideoVision Studio.

The Targa 2000 has good audio capabilities. Most important, 16-bit audio stays fully synchronized with video. Compare this with the VideoVision Studio, whose audio can wander noticeably out of sync in a few minutes. The Targa 2000 keeps audio and video in sync by timing both through a single clock.

The Targa's built-in, stereo, 16-bit 44.1kHz and 48kHz audio supplies better-quality sound than the 8-bit built-in audio of the VideoVision Studio and the hobbyist-level miniplug connectors on NuBus AV and Power Macs.

But as a tool for professionals, the Targa 2000 does have a few shortcomings. It should support the XLR and BNC connectors found on professional audio and video gear, and it should have more audio channels and digital audio I/O.

The Targa's current incompatibility with Wacom tablets (a problem Truevision plans to fix) limits the board's use with programs such as Strata's MediaPaint. The board doesn't work with Radius VideoFusion. Most important, the Targa 2000 is not compatible with Radius NuBus cards and their software drivers.

The Targa 2000's hardware puts it in a league with systems such as Data Translation's Media 100, Avid's Media Suite Pro, and the Radius Telecast. But all of those systems offer dedicated video-editing software. Truevision's board doesn't limit users to one vendor's editing environment, but it does limit them to shrink-wrapped software that isn't hardware specific. If current QuickTime tools such as Adobe Premiere and After Effects meet your needs (and they very well might), then this isn't a problem. And the Targa 2000 accelerates Premiere dissolves and wipes, rendering those transitions about six times faster. But Premiere 4.0 isn't all things to all people. It's a good tool for short, design-intensive work, but if you need a tool for longer narratives, you must turn to dedicated systems.

### The Last Word

With PCI digital-video boards on the horizon, including a PCI version of the Targa 2000, should you wait to buy? No, because there's always something better around the bend. If you need to produce digital video today and off-the-shelf software meets your needs, then the Targa 2000 will deliver the video and audio quality you need.—JIM FEELEY

# BeyondPress 1.0

**HTML Converter for QuarkXPress**

**PROS:** Fast, simple conversion from QuarkXPress to HTML; automatically converts graphics to GIF and JPEG formats. **CONS:** Expensive; no phone number listed for tech support.
**COMPANY:** Astrobyte LC (303/534-6344).
**LIST PRICE:** $595.

MW ★★★★

WITH THE INTERNET'S POPULARITY explosion, publishers want software that streamlines the process of transforming page-layout documents into World Wide Web pages. One of the most impressive utilities to emerge so far for creating nearly push-button Web pages is BeyondPress.

Astrobyte's new XTension provides a powerful set of tools for converting QuarkXPress documents into HTML (HyperText Markup Language) files, ready for posting to a Web server. BeyondPress grabs the images embedded in XPress picture boxes and translates them into GIF or JPEG graphics.

BeyondPress adds a Document Content palette to XPress; the palette displays the entire contents of an XPress document, with small icons representing each text chain and picture box. You can select and load into this palette any item you want to export to your Web document. To add an item—a newsletter article, for instance—just select the text box containing the item and click on the Add Items button. An icon representing that article appears, named with the first 47 characters of the text chain. (You can rename items on the palette, however.)




**From Quark Page to Home Page** BeyondPress places a Document Content palette in QuarkXPress 3.3. You can translate items in XPress documents to HTML format by clicking on them in the palette.

Once the items you want to export are loaded into the Document Content palette, you can reorder them by simply dragging their icons. Using the palette's other buttons, you can also suppress specific items (whole items or just a particular section of text) or split a single item—such as an article—into multiple pieces that can be reordered or reformatted. You also can insert spaces, line breaks, and horizontal rules between items by dragging the appropriate icons into place.

To preserve the original document's formatting, you can map your Quark style sheets to 19 standard HTML tags (such as Ordered List, Headline 1, Quote, and so on); your styled text is automatically formatted with the corresponding HTML tags on export. BeyondPress can also automatically apply the appropriate HTML tags to preserve character formatting, such as boldface, italics, and underlining. (You can add new HTML tags by typing in the appropriate coding.)

BeyondPress handles graphics file conversions well, too. Once you include an image from a picture box on the Document Content palette, BeyondPress provides several ways to modify it. You can rescale the picture and change its alignment in relation to the surrounding text, for instance. BeyondPress also lets you embed hypertext links to internal or external documents as you translate text to HTML. To set up a link, select the text in the original XPress document, then click on the Linking button on the Document Content palette. You indicate the destination of the link by selecting other text within the document or by typing in a URL (Uniform Resource Locator) to find a document on the Web. BeyondPress turns your instructions into the HTML tags needed to perform the link.

If you have a Web browser such as Netscape Navigator, BeyondPress allows you to preview your work before you export the items for HTML output. When you're done, all you have to do is click on the Export button. The text items you've selected are written as HTML files, while the graphics are saved as GIF or JPEG files in the same folder.

### The Last Word

At $595, this is one XTension that costs almost as much as QuarkXPress does. The telephone number is not listed in the manual or other supporting materials, so it's virtually impossible for most people to know where to call for tech support (dial the main number, listed above). And you can't use BeyondPress unless you have QuarkXPress 3.3. But if you need to repackage XPress documents for publication on the Web, BeyondPress is a nearly perfect solution. Its intuitive approach to organizing data within XPress for HTML export can save you hours of frustrating labor.—JOSEPH SCHORR

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# MacAdministrator

**Group Administration Tool**

**PROS:** Inexpensive; can schedule events; extensible through AppleScript; exports to Excel and FileMaker Pro; documentation on disk. **CONS:** Can't print reports directly; awkward to use with PowerBooks; no troubleshooting information. **COMPANY:** Hi Resolution (508/463-6956). **LIST PRICE:** Ten-user pack $395.

MW ★★★★

NOT ALL NETWORKED MACS SERVE a single user. Many Macs are in shared environments, such as classrooms, training labs, and printing centers. Controlling machines used by different users can be an arduous task: people inadvertently move or delete files, install their own software, and try to do things such as print their 100-page master's thesis on your buck-a-page color typesetter.

MacAdministrator comes in a deceptively tiny package: a CD jewel case containing two floppy disks (not CDs) and a thin installation pamphlet. The install process loads both the software and a set of manuals in Adobe Acrobat format.

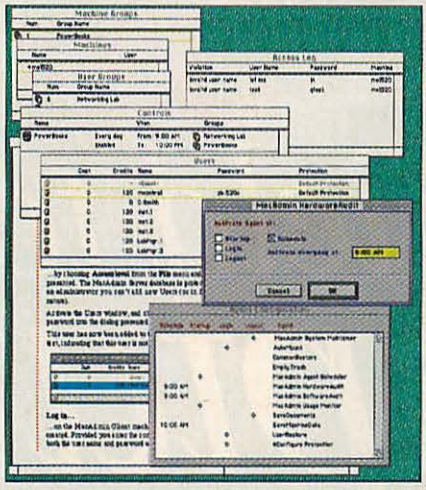
You install MacAdministrator first on a server machine. Once the server software is installed and launched, you can install the client software on user Macs. Warning: read the online manual first. During client installation, the server must be up and running, as the client software checks into the server immediately after installation. Once you've installed a client, that machine is not usable until you register users on the server.

The heart of MacAdministrator is its user and group database, which lets you organize users and Macs into groups to administer the policies you set. The server program lets you edit and view this database. MacAdministrator's database is unrelated to the Users and Groups control panel; however, MacAdministrator can work with your Users and Groups settings to control network access.

Once you've created user records for each user and organized users by group, you can establish a standard software environment for each group. The Common Files folder contains two subfolders, Applications and System. When a user logs on, the common files are automatically copied onto the client machine; at future log-ons, any common files that have been altered are automatically replaced on the client by the server.

Every client machine boots up into a screen saver. To access the machine, a user must enter a registered user name and password; the server machine then validates the user, restores common files, and reestablishes any user-created files. MacAdministrator's security can detect users who unplug their machines from the network and block their access; but if the server machine is legitimately down, you can configure any or all clients to bypass log-on so that the server machine doesn't become a single point of failure.

MacAdministrator also lets you limit access to specific printers and set cost limits per user. You specify a cost-per-page value for each networked printer, and MacAdministrator automatically tracks usage. Printer control is a script, or agent, that runs on a client machine to collect data or control behavior. Other agents collect hardware- and software-configuration information and application-usage statistics. The server can schedule agents to run at specific times or at start-up, log-in, or log-out, and then retrieve statistics and export them to Excel or FileMaker Pro files.



**Mac Control** MacAdministrator lets you distribute software, maintain individual user environments, monitor software and hardware usage, and schedule automatic maintenance events for groups.

MacAdministrator's faults are few but can be annoying. First, you can't print reports directly from the server; you must export to Excel or FileMaker Pro to print. Second, the product is overzealous in its security for PowerBooks—prohibiting sleep mode, for example. And the documentation lacks a troubleshooting section, which would have eliminated a few calls to Hi Resolution's tech support.

### The Last Word

If you administer a group of shared Macs and are tired of constantly reloading software and debugging user-induced problems, MacAdministrator is for you.

—MEL BECKMAN

# SnapMail 2

**Electronic-Mail Software**

**PROS:** Inexpensive; user-definable message forms; Talk mode; multiple mailboxes. **CONS:** No built-in SMTP capability; complicated, poorly documented proprietary gateway option. **COMPANY:** Casady & Greene (408/484-9228). **LIST PRICE:** $250 for 5 users, $420 for 10 users, $1940 for 50 users.

MW ★★★

AS A RULE, E-MAIL PACKAGES ARE among the hardest network applications to get running correctly. SnapMail has always been an exception. In addition to carrying forward its predecessor's reputation for easy setup and simple administration, SnapMail 2 brings a slew of new features to the table. And if you're hankering for E-mail that travels the Internet, you can also buy Information Access Technologies' HoloGate gateway software ($135, $162, and $500 for 5-, 10-, and 50-user packs).

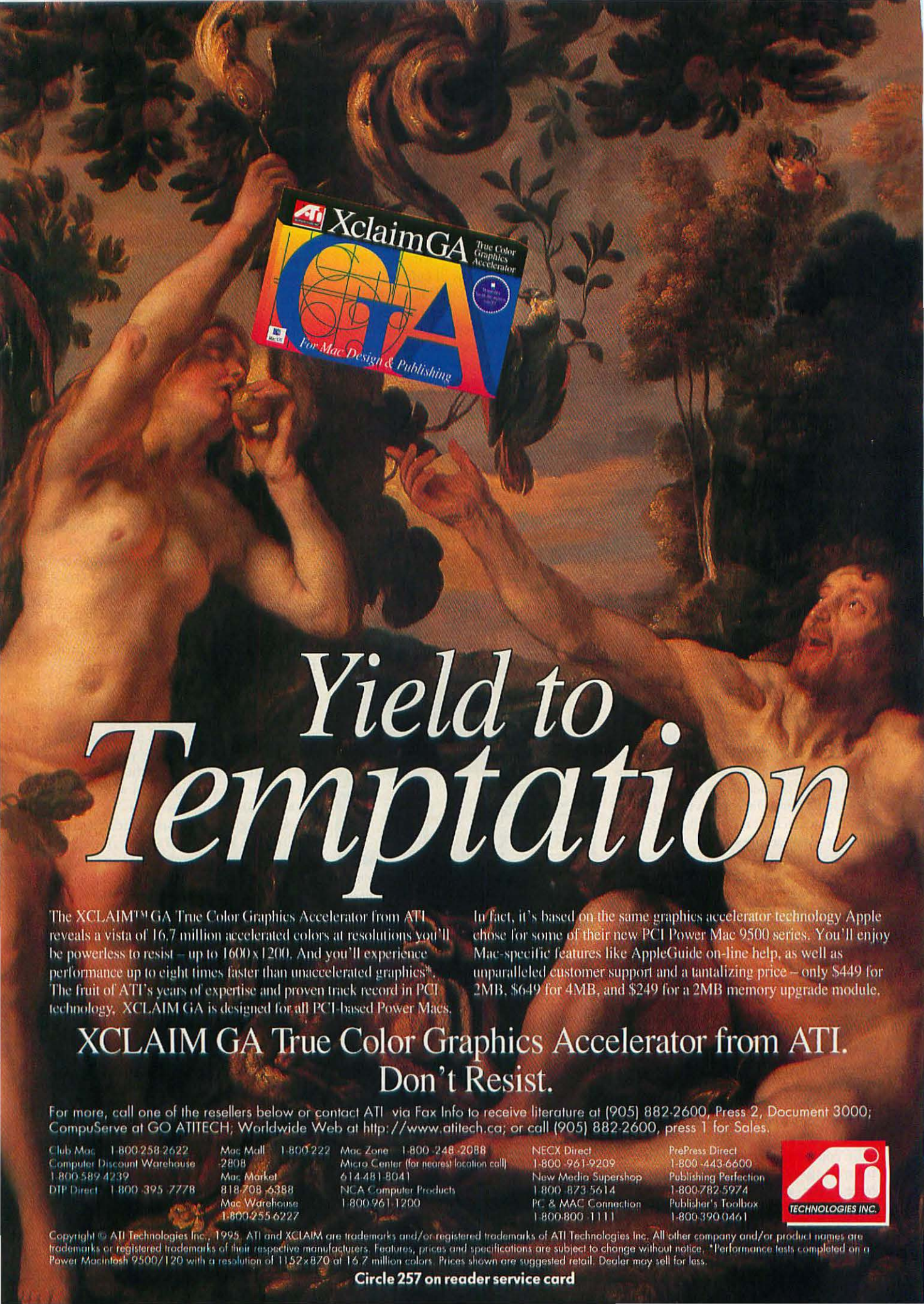
SnapMail 2 includes one set of installation disks, one manual, one HoloGate 30-day demo, and a quick-reference card for each user. Once installed, SnapMail 2 limits the simultaneously connected users to the number licensed; you can increase this number with a phone call to Casady & Greene. The basic package runs only over AppleTalk; you need to buy the SnapMail 2 package bundled with HoloGate to exchange mail with other networks and E-mail systems.

Although it's more sophisticated than version 1.0, SnapMail 2 is just as easy to use. Launching it via the Apple menu or a configurable hot key brings up a window (now resizable) with an in-box, an out-box, and a user list. Other improvements include the abilities to create folders for filing messages, enclose entire folders as attachments, and send carbon and blind-carbon copies—plus you get an address book, text searching, configurable display fonts, and a new Talk mode.

To send a message, you choose a recipient from the address book and type text into the out-box. You can attach files or folders, or a copy of the Clipboard, by pressing the paper-clip button. A pull-down menu lets you configure SnapMail 2's options for user groups, alerts, receipts, forwarding, and other preferences.

SnapMail 2's interface is cleaner and more attractive than version 1.0's, but its changes are minor. There's a new menu for sorting and categorizing E-mail into

*continues*




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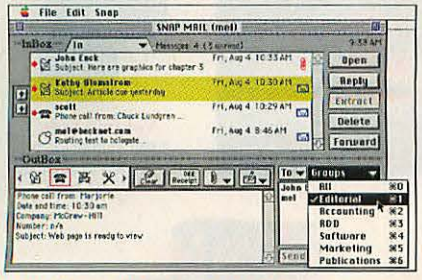
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folders, and a button for forwarding messages. SnapMail 2 has the same message forms as the old version: you create fill-in-the-blank templates for standard messages, such as phone notes or product orders. You can create your own forms using simple templates. SnapMail 2's Talk mode lets you converse (textually) with any number of other SnapMail 2 users.

The software comes configured to operate without a dedicated server: if a destination Mac isn't online when a message is sent, the sending Mac later retransmits the message when the destination Mac comes online. But this isn't practical if the sending and receiving Macs aren't both online together at some point. In such situations, you can designate a single Mac as a server to hold and forward messages for absent users.

Even with all its new features, SnapMail 2 never costs more than $50 per user, and is considerably less when purchased in quantity. And it addresses one serious problem—gateway capabilities for exchanging E-mail with other packages—by bundling HoloGate's E-mail gateway. Alas, the HoloGate gateway is both poorly documented and tedious to configure. For example, nowhere do the manual or built-in documentation explain how to configure the Internet SMTP (Simple Mail Transfer Protocol) module. HoloGate's manual also lacks both an index and an overall table of contents.

A few original SnapMail shortcomings remain: you can't embed graphics or




**Postal Remodel** SnapMail 2's new window supports all prior SnapMail features while providing a capable and reliable user interface.

style text within a message, you can't view more than one message at a time, and you can't automatically file or filter messages based on their header or contents. Given the rapid increase in Internet mail volume, this last feature would be very handy for sorting incoming message traffic.

### The Last Word

For the money, you can't find an E-mail package that's easier to install and use than this. However, the kludgy HoloGate gateway interface may limit SnapMail 2 to AppleTalk-only offices.—MEL BECKMAN

# Wireless Ethernet Solution

**Network Tools**

## Manta 500EN; Starfish Ethernet Access Point

**PROS:** Provides wireless networking in an Ethernet environment; easy to configure and manage; upgradable via flash ROM. **CONS:** Supports AppleTalk only; high per-unit cost; works only with Macintoshes that are equipped with an AAUI port. **COMPANY:** Digital Ocean (913/888-3380). **LIST PRICE:** Manta $799; Starfish$1850.

MW ★★

DIGITAL OCEAN'S STARFISH AND Manta bring wireless communication to Macintosh Ethernet networks. (Wireless networking for LocalTalk environments has been around for a few years.) While they are a pricey solution and have some drawbacks, the products' ease of installation and upgradability may appeal to some.

The Manta and Starfish are a wireless Ethernet team. The Manta is an Ethernet station that installs on a desktop Mac or a PowerBook; it exchanges radio signals with the Starfish, an access point that plugs into your office's wired network and lets the Manta communicate with the network. The Manta and Starfish communicate via WaveLAN, a spread-spectrum radio technology that can pass through walls and doors. (Slower, infrared technology is also used for wireless networking, but it currently only travels over LocalTalk environments.) Installation for both products is simple, involving nothing more than plugging in the network and power connections. The included management software allows you to configure groups of Mantas and set passwords for Starfish access.

Spread-spectrum technology is fairly robust and can pass through walls and floors, but big metal obstacles, such as elevator shafts, sometimes present a problem. I set up the Manta on a desktop Mac about 60 feet away from the Starfish station. They were separated by several walls; communication between the units was unimpeded, but it was not breathtakingly fast.

To test the performance differences between wired and wireless communication, I transferred a 1024K text file several times over three different connections: wireless Mac to wireless Mac, wireless Mac to wired server, and wired Mac to wired server (the traditional office Ethernet setup). The wireless-Mac–to–wireless-Mac transfer was the slowest; it took 166 seconds on average. The wireless-Mac–to–wired-server rate was much better, averaging 62 seconds. The wired-Mac–to–wired-server transfer took, on average, 6 seconds. Even though these products function in an Ethernet environment, they don't provide the transfer rates normally seen on a traditional wired Ethernet network.

The Manta and Starfish combination currently supports only AppleTalk. Digital Ocean is working on an upgrade that should be out soon and that will add TCP/IP options. The good news is that the products are upgradable via flash ROM, so you won't need to purchase new hardware when the upgrade becomes available.

If you're considering this as an ultra-convenient way to wire your network, think again. At $799 per Manta, the cost of installing a wireless office network is




STEVE HATHAWAY

prohibitive compared with the cost of installing network cable, which for an average installation might be half the price. Rather than using Starfish and Manta to replace your wired office network, it's more practical to install them as auxiliary network resources—say, in a conference room, where roaming PowerBook users might congregate and require occasional hassle-free network access, or in a temporary structure that doesn't require permanent wiring.

### The Last Word

The Manta 500 EN and Starfish Ethernet Access Point are a capable wireless network solution, improving on the performance of slower infrared and LocalTalk options. Unfortunately, you have to weigh the benefits of convenience and mobility quite heavily against the high per-unit cost. When their prices come down and they support additional protocols, the Manta and Starfish should do quite swimmingly.—MATT CLARK

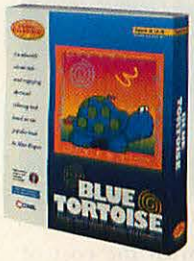
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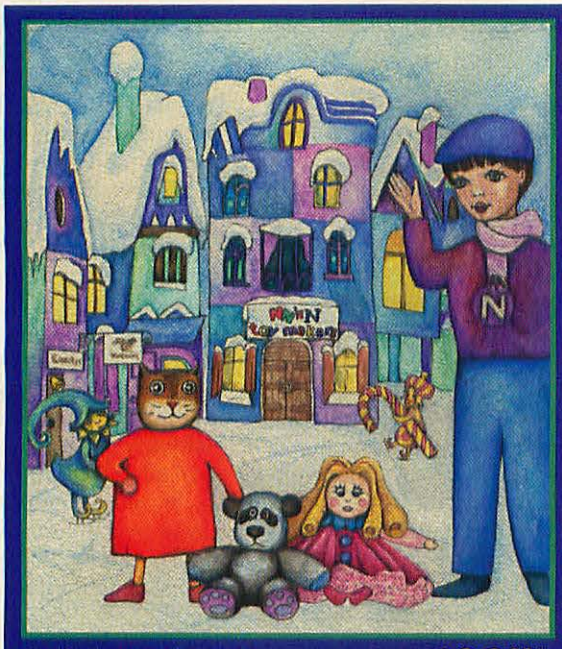

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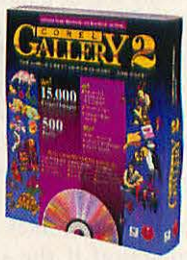
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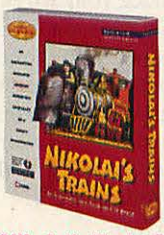

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# Working Model

**Motion-Simulation System**

**PROS:** Easy to learn; powerful; accurate; great selection of components. **CONS:** Slow and not native on Power Macs; scripting based on Visual Basic. **COMPANY:** Knowledge Revolution (415/574-7777). **LIST PRICE:** $2495.

MW ★★★

KNOWLEDGE REVOLUTION PRODUCES the brilliant simulation program Interactive Physics II. Working Model 3.0 is that program's cousin, the one the family sent out to get a job. *Working Model* extends the scope of Interactive Physics, making it a practical tool for designing small machine parts and other modest mechanical contrivances.

Working Model 3.0 looks like a draw program or simplified CAD software. It presents you with an assortment of standard drawing shapes in a palette; you use them to make models for mechanical parts. The difference between Working Model and drawing software is that you can anchor some parts to fixed points in the drawing and allow other parts to pivot, rotate, or otherwise act on each other. Working Model provides an assortment of on-screen digital gauges to measure the force on components or to show the time course of physical variables, such as angles of rotations and torques.

You can also save and play back a simulation as a QuickTime movie—it generally plays much faster than the original simulation. Working Model can also export animations.

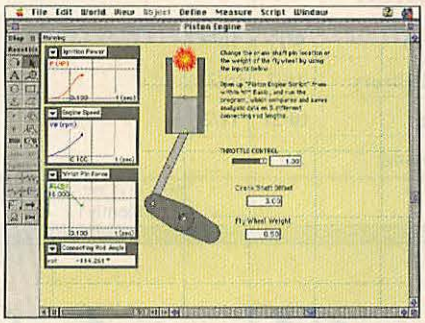
What makes Working Model especially useful is its ability to exchange DXF files gracefully with other programs—you can design a mechanism in your favorite drafting program, ship it to Working Model, and add the action parameters there. As with most general-purpose simulation programs, there is no obvious way to account for wear on parts (other than running simulations on parts of slightly different sizes), or for complex static-elasticity issues (the design of plastic cams would be difficult). Still, remarkably realistic simulations are possible. For example, the engine simulation shown in "Pumping Iron" allows detailed control of ignition timing and measurement of timing-dependent power output.

This simulation also demonstrates the new scripting capability's power: a sample script runs the simulation with connecting rods of various lengths. The scripting language, combined with a large library of linkages and components, extends Working Model's usefulness into the realm of real engineering. With a manual of more than 700 pages, mastering the scripting language is not trivial, but the script editor is easy to use and Knowledge Revolution provides enough examples so you can just cut and paste prepared scripts as you're learning.

Other new features include a faster integrator, a CAD-like snap-to function for drawing elements at defined points, and an editor that shows the results of numeric changes in dialog boxes.

My two main complaints about Working Model stem from the fact that Knowledge Revolution has drifted away from its Mac roots and is now oriented toward a Windows-based development model. Working Model 3.0 is not Power Mac native, and when you use it on a Power Mac, you run your simulation in emulation, and performance suffers.

The scripting language, though a powerful addition, is based on Microsoft Visual Basic. A majority of Macintosh users, particularly those in science and engineering, will have to learn Visual Basic—it's an awkward choice for anyone but a Windows developer. A final complaint is that, while the steep professionals-only price won't discourage engineers used to AutoCAD's pricing policies, casual users will be forced back to the less-expensive Interactive Physics, which is not as useful a program for design.



**Pumping Iron** This simulation of a single-piston engine keeps track of the forces and torques on each mechanical component. But the great strength of Working Model is the scripting facility, which lets designers experiment with different configurations automatically.

### The Last Word

Working Model is a fine product, and its essentials are easy to master. It's one of the few mechanical-simulation programs you can use for professional designing, instead of just for lab demonstrations. Version 3.0 has a strong feature set, but it needs to go native to show off its strengths on current Macs.

—CHARLES SEITER

# ArtZ II

**Tablet with Erasing Stylus Pen**

**PROS:** Convenient erasing stylus; excellent pressure-sensitivity controls. **CONS:** Graphics programs must be upgraded to work with eraser. **COMPANY:** Wacom Technology (360/750-8882). **LIST PRICE:** 9½-by-13-inch tablet (6-by-8-inch active area) $389.99.

MW ★★★★

GRAPHICS PROFESSIONALS HAVE A wealth of creative tools to choose from when fine-tuning images—everything from bleaching instruments to scraping tools that work like actual palette knives. But the latest tool is also one of the simplest: a stylus pen with an eraser.

The ArtZ II pressure-sensitive graphics tablet, with the new erasing UltraPen, lets you quickly rub out whatever rubs you the wrong way. The familiar pencil-thin Wacom stylus has a spongy bulb at the top that looks and works just like an eraser. In graphics programs that support the feature, turning the stylus upside down automatically selects the eraser tool. The erasing bulb responds to pressure so you can feather edges, lighten colors, or eliminate a line or other element.

Programs already supporting the UltraPen eraser include Fractal Design's Painter 3.1 and Dabbler 1.0, Adobe Photoshop 3.0.4, and FutureWave Software's SmartSketch 1.0. Currently, both Painter and Photoshop require that you install a script (included with the tablet) to make them eraser aware. Only the most current versions of Painter and Photoshop will work with the script.

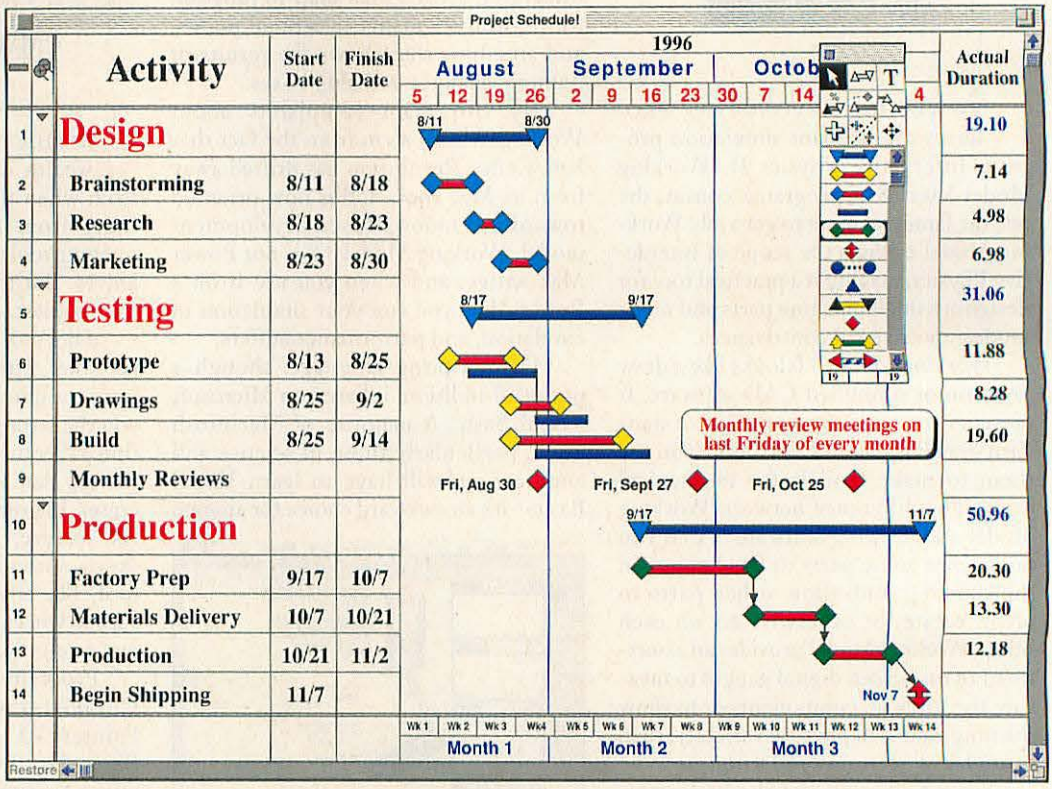
Using the ArtZ II is a pleasure. The erasing UltraPen is light and fits comfortably in your hand. The pen is cordless but requires no batteries. The stylus point rarely strays off course when drawing, which makes it feel as if you're sketching with a pencil. And the degree to which you can adjust the pressure sensitivity at either end of the pen is practically limitless.

The UltraPen has one button on the barrel (for executing macros and keyboard shortcuts) and retains the modest overall dimensions of its nonerasing predecessor; the only difference is the pressure-sensitive erasing bulb at its top. But the ArtZ II is more aware of the tilt and bearing of the stylus than its predecessor. Tilt refers to the angle between the stylus and the tablet; bearing is the direction in which the stylus is tilted. Using the

*continues*

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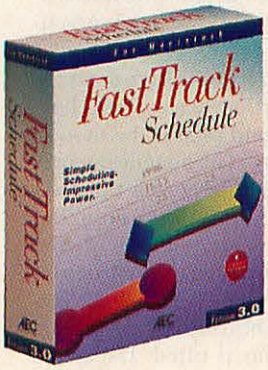
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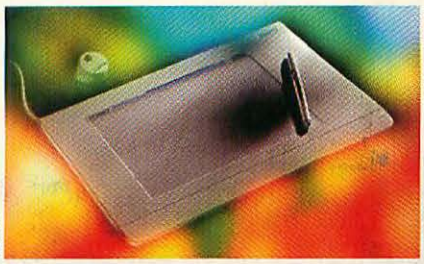
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tablet's control panel, you can adjust the tablet's sensitivity to stylus tilt. With programs such as Painter, brushes can produce calligraphic effects or control brush variables like opacity.

Even if your programs aren't eraser-compatible, the UltraPen's eraser is useful. The eraser bulb (like the pen's barrel button) can be programmed to perform ⌘-*key* sequences and execute macros. You can set it to produce just the modifier-*key* sequence (⌘-shift), letting you add the final defining keystroke as you draw. And with programs such as word processors and spreadsheets, the UltraPen's eraser lets you select and delete text with one swipe, without modifying the program.

The ArtZ II provides a row of 16 user-definable buttons that accept macros written by such programs as CE Software's QuicKeys and Affinity Microsystems' Tempo II Plus. Nine buttons come defined for common functions, such as save, cut, and paste, that work with any program. As a result, you don't have to start programming to benefit from the



GIBSON

Wacom ArtZ II

ArtZ II's button strip. Two additional buttons are dedicated to changing pressure settings, letting you adjust stylus sensitivity without opening the control panel.

ArtZ II tablets come in various sizes (and prices), with working areas up to 18 by 25 inches. I used the sketch-pad size (9½ by 13 inches, with a 6-by-8-inch active surface). Only ½ inch thick and weighing less than 2 pounds, the maneuverable ArtZ was comfortable on my lap.

Installing the ArtZ II is simple and straightforward. An ADB pass-through connector lets you plug in the tablet and retain full keyboard and mouse functionality. The quick-setup card gets you connected and drawing in minutes. The beautifully produced manual is well organized and clearly written—it's easy to find the information you need.

### The Last Word

The intelligently designed, well-manufactured ArtZ II is sensitive enough to handle the exacting needs of artists and illustrators, yet rugged enough to handle the demands of other users, too.

—CARLOS DOMINGO MARTINEZ

# Colorize 2.0

**Software for Colorizing Line Art**

**PROS:** Easy to use; sophisticated tools. **CONS:** Expensive; doesn't open EPS or PICT files; limited undo; a hunger for RAM. **COMPANY:** DS Design (919/319-1770). **LIST PRICE:** $495.

MW ★★★

IN THIS ERA OF EVER-EXPANDING, feature-crammed graphics applications—HSC Software's Live Picture, Adobe Photoshop, and Macromedia FreeHand, to name a few—it's refreshing to come across a program that does one thing and does it well. You can't get much more focused than Colorize, a program whose only goal in life is to let you add color to bitmapped, black-and-white TIFF files (clip art, scanned images, and the like).

Although Colorize's domain is narrow, its simple, easy-to-follow interface and sophisticated tools give it wide appeal. Regardless of your graphics skill level, Colorize makes sprucing up a black-and-white image with color as painless as possible. Colorize is a breeze to install, and its manual is clearly worded, with good, basic explanations of trapping and calibration. The online help manual and on-screen tutorial will get you up and running quickly.

After launching Colorize, you open the bitmap you want to color. A dialog box pops up detailing the image's dimensions in pixels and its size in megabytes—a nice touch. Drag the colors you want from the Color Families libraries to the Shades Palette, or create custom colors. Then select the paint tool from the toolbox, adjust its size by dragging while holding down the ⌘ key, and start coloring.

A handy paint-to-edge tool makes it difficult to *accidentally* color outside the lines (see "Toeing the Line"). If you do goof, the similarly constructed erase-to-edge tool helps you clean up your mess without inadvertently rubbing out the colors you want to keep. For more exact editing, the erase-fragment tool rubs out just what the cursor crosshairs touch, while the despeckle tool lets you zero in on unwanted color flecks and small dots.

Version 2.0 adds a few handy special-effects tools. The main blend tool lets you fill areas with blends and gradients you create using one or two colors. Three airbrush tools—airbrush, splatter, and soft splatter—let you soften colors. You can apply these tools only to CMYK color layers (process colors that typically comprise percentages of several colors) and not, for instance, to spot colors.

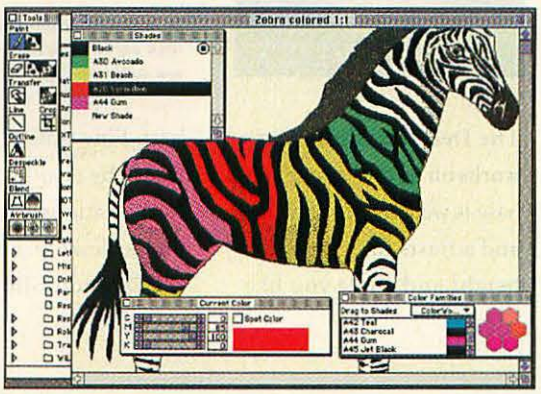
Creating custom colors is a snap. The Hue, Saturation, and Lightness slider bars, for instance, let you easily adjust the CMYK percentages of a color; within the same window, a cluster of color hexagons displays your change. And although Colorize can't actually open EPS files, such as those created in Adobe Illustrator or Macromedia FreeHand, you can import spot colors from them.

Manipulating colors quickly and easily on screen is great, but what happens when you print? Colorize offers some limited, but useful, trapping controls to adjust for overlapping inks. You can set trapping values from –32 pixels (for an offset trap) to 0 (for no trap) to +32 pixels (for a maximum trap). As you paint, Colorize automatically traps the color you're adding to the image's Source Color (you can change from the default black), and you can preview the trapping on screen.

Though capable, Colorize has some room for improvement. Many clip art packages offer line art only in EPS or PICT format, which Colorize can't open. The program's single level of undo does not exactly encourage experimentation. And some simple functions—such as cut, copy, and paste—are grayed-out in the Edit menu (meaning they'll be available in a future version).

### The Last Word

Colorize's $495 retail price seems a bit steep for a program that's essentially a one-trick pony. But if you have a regular need to colorize black-and-white artwork, this narrowly focused program is well worth the money.—JAMES A. MARTIN




**Toeing the Line** Colorize lets you add color to the white areas of a line-art image, such as this zebra, without accidentally painting outside the lines.

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# Passage to Vietnam

**Multimedia CD-ROM**

**PROS:** Beautiful and haunting photojournalism displayed with an engaging and flexible interface; innovative use of QuickTime. **CONS:** None. **COMPANY:** Against All Odds Productions/Interval Research (800/558-3388, dept. 100). **LIST PRICE:** CD-ROM $39.95, CD-book bundle $59.95.

MW ★★★★★

PASSAGE TO VIETNAM, A MULTIMEDIA photojournalism project shot in one week in Vietnam in 1994, features the work of 70 photographers from magazines such as *Newsweek*, *National Geographic*, and *Life*. Together they've created a contemporary portrait of a place Americans know first as a war and only vaguely as a country.

The guiding force behind Passage to Vietnam is Rick Smolan, an experienced photographer and multimedia producer whose projects have included the Day in the Life series and one of the first real hits of the CD-ROM world—From Alice to Ocean. He guides the viewer through this hauntingly beautiful CD, reintroducing us to a country moving out from under the shadow of war. His narration provides a thread for us to follow through this amazing collection of photographs.

While the photojournalism here is first-rate, what makes Passage so special is the seamless integration of music, video, and text with the core photographs. As you click through the six topics, or "passages," that the photographers explored, Vietnamese music accompanies your tour. Credits for the photos appear alongside icons for audio and video clips offering context and a look at the stories behind the scenes. I particularly appreciated being able to toggle the icons and other interface elements on and off to see the images without distractions.

The photojournalists' work is stunning, but equal credit is due to ad-hoc Interactive, creators of the interface. A cube floating in the lower-right corner of your display offers navigation tools, built-in help, a bookmark feature, and highly customizable preferences for viewing and interacting with the information. There are keyboard shortcuts for all tools, and with more than eight hours of material, a respite from mousing is welcome.

Passage makes extraordinary use of Apple's QuickTime technology, containing over an hour of video of the photographers, both on assignment and discussing their work. Video and still images are often blended, so photographers seem to step into their photos as they discuss them. By breaking out of the tiny window we expect from CD-ROMs, Passage shows us just how revolutionary QuickTime can be.



**On the Monkey Bridge** Each of the CD's six "passages" explores a different aspect of Vietnamese life. In this screen, a short QuickTime clip of Rick Smolan introducing the River Life passage is integrated with a still photo.

**The Last Word** Passage to Vietnam is an amazing work. It's innovative, well crafted, and sets a standard for multimedia projects that won't soon be equaled. Few CD-ROM projects offer such exceptional content, and fewer still are able to match this seamless integration of materials. Passage to Vietnam is clearly one of the best CD-ROMs of the year, and I can't recommend it more highly.—MATTHEW HAWN

# FrenchNow 3.0

**Language-Learning Tool**

**PROS:** Good texts; well-designed interface; audio and game features. **CONS:** Records voice input only one word at a time; some texts in series don't come on CD-ROM. **COMPANY:** Transparent Language (603/465-2230). **LIST PRICE:** Disk and audiocassette $99, CD-ROM $129.

MW ★★★

IF YOU'VE EVER SLOGGED THROUGH *Madame Bovary* with a French dictionary and a grammar, you'll appreciate what FrenchNow 3.0 from Transparent Language can do. It won't teach you French from the word *allez*, but it will improve your reading skills, vocabulary, and grammar. It's a useful tool for any Mac-equipped language lab.

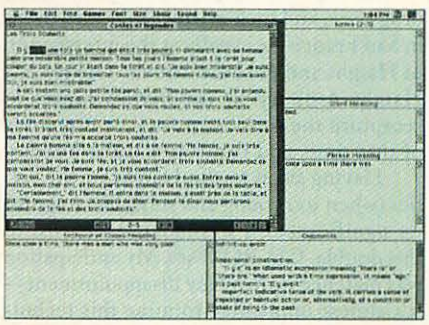
FrenchNow uses lively, high-quality texts. This Master Program Package, which I tested in the CD-ROM version, offers the basic engine (which runs all of Transparent Language's titles—French, Spanish, Italian, Russian, German, and yes, even Latin) and three texts: a folktale collection; excerpts from a cultural journal; and a travelogue divided into tourist-friendly segments.

FrenchNow is generally well designed. The main text appears in a window surrounded by subordinate windows: Sentence or Clause Meaning, Phrase Meaning (which translates idiomatic or nonliteral constructions), Word Meaning, Comments (offering grammatical analysis), and Notes (a useful feature that lets readers or teachers write comments or questions). As you move the cursor through the text, the subordinate windows update. You can use the bookmark feature to mark difficult passages, favorite phrases, or where you left off reading.

In addition to reading the texts on screen, you can hear words, phrases, or segments from the text spoken aloud, and if you have a microphone, you can record and play back your own voice to compare your pronunciation. To gain a deeper understanding of the language, you can perform word and root searches. Finally, the program includes a grammar outline and three challenging games to reinforce vocabulary.

The program is not as polished as it should be, though. The grammar outline contains typos and there's no easy way to jump to a particular topic—you just scroll or page down. An oddly incomplete feature for Spanish speakers displays menus and help in Spanish, but leaves subordinate windows in English. Also, when recording your own voice to compare with the French reader's pronunciation, you only get to hear one word at a time—for example, *je m'appelle* is split into *je* and *m'appelle*. And only the Master Programs and a few titles are available on CD-ROM; others come only on disk and audiocassette, so you lose one of the program's best features—the ability to click on a word or phrase and hear it pronounced, rather than fiddling with a tape recorder.

**The Last Word** Transparent Language touts FrenchNow as a "comprehensive overview" of the language. This is an overstatement—it's not a replacement for a good class or a year in France. But FrenchNow is a unique concept in language-learning tools, and it's more fun—and more useful—than the *repetez, s'il vous plait* of a typical lab exercise.—GAIL NELSON



**Wish Fulfillment** FrenchNow's four translation windows, showing single words, sentences, idiomatic expressions, and grammatical explanations, are a boon for any student or teacher.

# Labtec LCS-3210

**Amplified Computer Speakers**

**PROS:** Good bass; reasonable level of loudness. **CONS:** Mediocre midrange and high-frequency sound; marginal magnetic shielding may affect your monitor; poor 3-D sound effect; lacks separate input for external CD-ROM. **COMPANY:** Labtec (360/896-2000). **LIST PRICE:** $169.99.

MW ★★

IF YOU WANT TO LISTEN TO CDS (games or audio) or use a multimedia program on your Mac, separate loudspeakers are a must for the best possible sound quality. There are many models, ranging from less than $50 to several hundred dollars. Into this crowded universe comes the modestly priced Labtec LCS-3210 system.

The Labtec system offers 10 watts per channel, separate woofers and tweeters, and a circuit to deliver a fake surround-sound effect called Spatializer. The tall, thin, high-tech design measures roughly 3½ by 11½ inches in the front (it slopes downward toward the rear).

In order to pump more bass out of a small speaker, Labtec uses a technique employed in some expensive loudspeaker systems, known as a transmission line, which funnels the low frequencies through a long, circular duct inside the speaker. The speakers also use what the manufacturer calls Max-X, which is designed to provide a higher level of undistorted output.

All the controls are on the right-hand speaker. Convenient front-panel knobs control volume, treble, and bass levels. Beneath the control knobs are a power-on switch and a switch for the Spatializer 3-D effect, plus jacks for a mike and an earphone. The rear of the speaker includes a jack for the power adapter, outputs to the left speaker and to a separate subwoofer (if you want better low-frequency performance), a stereo input for your Mac's audio output, and another mike jack. Missing is a jack for the audio output of an external CD player.

The Labtec speakers don't work any better than other loudspeakers in this price range. Bass is decent for a small speaker, but the midrange (which is where most musical and vocal material lies) is somewhat harsh and a bit overemphasized. Backing off on the treble control helps a bit but at the expense of decent high-frequency performance. Magnetic shielding is not as well implemented as in other speakers I've seen. While playing my favorite CDs at room-filling volumes, I noticed slight flickering on my 20-inch Trinitron monitor unless I moved the speakers at least two inches from the sides of the screen. The Spatializer 3-D effect is nothing to write home about either. It does provide the promised expansion of the audio soundstage, but this brings even more distortion, and there's no way to adjust the amount of surround-sound effect you get. I finally turned it off.

**The Last Word** Although attractively designed and easy to use, the Labtec LCS-3210 has some serious problems, such as its harsh and sometimes ear-frying midrange and poorly implemented 3-D–sound feature. If you want the best possible sound in a small package, I suggest you look elsewhere.—GENE STEINBERG



ROBERT PERRY

# Haight-Ashbury in the Sixties

**Multimedia CD-ROM**

**PROS:** Everything you ever wanted to know about flower children. **CONS:** Badly organized; music and video clips are badly reproduced, without contextual information, and too few. **COMPANY:** Compton's NewMedia (619/929-2500). **LIST PRICE:** $49.95.

MW ★★

IN THE SIXTIES, DISENCHANTED FOLKS variously seeking peace, enlightenment, drugs, sex, and rock 'n' roll all crossed paths in San Francisco, usually at the intersection of Haight and Ashbury streets. Compton's Haight-Ashbury in the Sixties hopes to recapture the passion, poetry, and politics of that time, and throw in a game besides.

Having been to the Haight in the sixties (when too young and suburban to grasp its significance), I was looking forward to this double–CD-ROM set. My anticipation was matched only by my disappointment—it's almost impossible to mine this technically and graphically aggravating CD's enticing nuggets of cultural history.

Disc 1 is divided into two parts: Turn On and Tune In. Turn On is a neat reference device. When you click on it, it plays a documentary titled The Rise and Fall of the Haight-Ashbury, which combines all the stills, posters, and music that make up the CD—except, surprisingly, the 17 video clips; those you have to access separately.

The Tune In section is a random-access index of the material, but for some unknown reason it spills over onto disc 2, where some of the topics on disc 1 are listed again. The other part of disc 2 is a game called Drop Out; it's kind of a combination of Trivial Pursuit and Monopoly's Community Chest cards, but it's hard to imagine anyone who's interested in cultural history asking three friends over to pass around the mouse.

For a pair of multimedia CDs, they have a surprisingly limited layout and amount of information. For instance, the CDs contain the text of the *San Francisco Oracle* newspaper, but when you click on the issue or article you want, the text appears in a 4-by-3-inch box in what looks like 9-point Arial type.

You can listen to nine music clips. While they include selections from the music of Janis Joplin, Jerry Garcia, and Jefferson Airplane, you also get Allen Ginsberg tunelessly reciting poetry.

Even worse are the video clips. You get only 17 clips, duplicated on both discs. Many are badly reproduced and scarred with vertical lines. In some cases the sound is deplorable. And one clip of actor Peter Coyote (whose work with the anarchic Diggers long preceded his appearance in *E.T.*) is only 11 seconds long. Even more disappointing, the clips play on a blank screen with no contextual information.

**The Last Word** While the content of Haight-Ashbury in the Sixties can't be faulted for its depth and authenticity, its presentation is wholly disappointing. I was hoping for a trip back in time, but instead I got a really bad trip.—HOWARD BALDWIN




**Bad Trip, Man** Timothy Leary gave his "turn on, tune in, drop out" speech at a be-in in January 1967, but you'd never know it because none of Haight-Ashbury's video clips sport captions.

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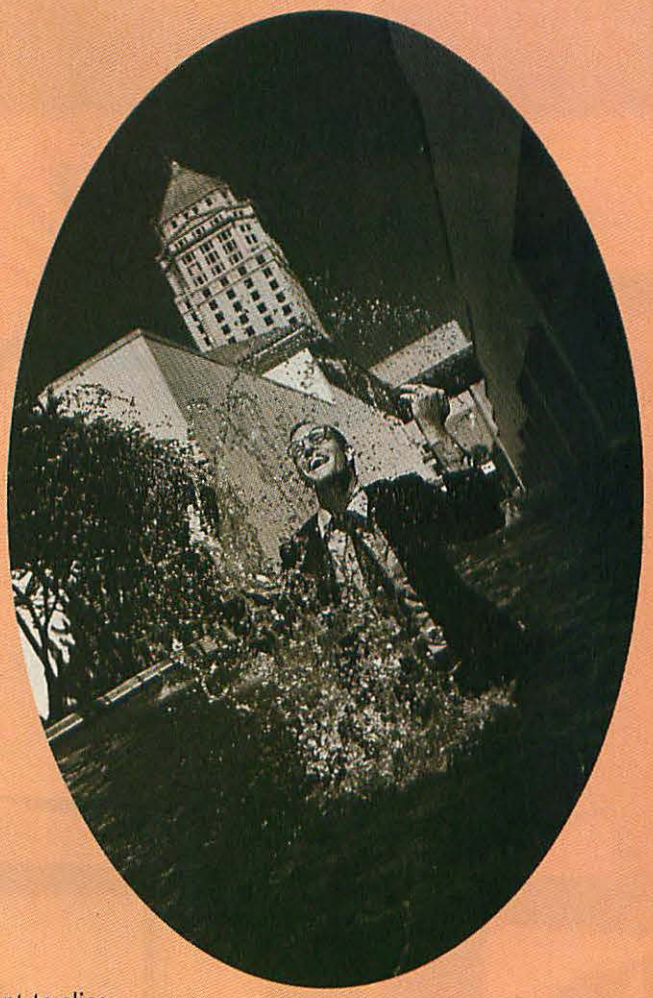
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You begin

With a hunch.

You begin

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1

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You type "Jan."
You use AutoFill
And the rest of the months
Are filled in for you.
Automatically.

2

You enter numbers.
You click AutoFilter
And the data you want to see
Rises to the top
So you can focus on
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3

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# SLIDE SCANNER SPECTRUM

TODAY'S VARIETY OF SLIDE SCANNERS BRING IN HIGH-QUALITY **IMAGES** FOR GRAPHICS PROS ON A BUDGET

MW LAB

BY CARY LU

WHILE FLATBED SCANNERS ARE NEARLY ubiquitous in graphics shops, slide scanners have yet to become a must-have peripheral. Still, these somewhat exotic devices are becoming increasingly useful for transforming photographic film—slides and transparencies—into files you can work on in Adobe Photoshop. Slide scanners surpass their flatbed counterparts in avoiding image degradation. With flatbeds you go from film to paper to digital—losing resolution with each step. Slide scanners cut out the middle step—and they're becoming less expensive.

Three years ago, you could pay anywhere from $2200 to $16,400 for a slide scanner; following *Macworld*'s recommendations at the time, you'd have paid between $9535 and $11,316 for our favorites (see "Seeing through Slide Scanners," October 1992). This time around, we tested five scanners, ranging from a $749 street price to $7995 list—and one of our favorites for a good-quality, general-purpose slide scanner costs just $1995. Later this year, you'll have more scanners to choose from in the under-$1000 category because vendors such as Nikon hope to expand the low-end market.

We tested only digital slide scanners, as opposed to flatbed scanners with slide attachments, because digital scanners produce better-quality output. We tested the scanners several ways, looking at speed (anywhere from 1 minute to 17 minutes per slide), density (how well the scanners handled details in the bright and dark areas on slides), and how closely the

PAUL FRANZ MOORE

scanners matched their resolution specs.

We also looked at other features—unattended loading, focusing, size—to find out what distinguishes a scanner worth hundreds of dollars from one worth thousands. We compared these features to those of three systems ranging from $17,000 to $95,000, to determine what you might get if money were no object. We did some informal testing on several low-priced alternatives but found the results suitable just for FPO (for-position-only) images (see the sidebar "This Sidebar for Position Only").

Slide scanners will never be as common as flatbed scanners, because most of what we want to put in computers is on paper, not on film. Still, at today's prices many more people can take advantage of slide scanners in their businesses and enjoy fast turnaround of images—minutes instead of the overnight turnaround of a service bureau. There's still a place for high-end scanning performed by an expert service bureau for $25 to $50 a pop, and you can get slides scanned onto Photo CDs for just a couple of bucks per slide with acceptable results. But with a slide scanner at your desk or down the hall, you'll find yourself sending images out for scanning less and less often.

## Features to Scan For

What's the difference between a $749 scanner and a $7995 scanner? They both scan slides, right? Sure, but some do it at 2700 dpi, and some at 1828 dpi. Some scanners handle darker areas better than other scanners do; these have a wider dynamic range. Others have capabilities that match well with the kind of camera and film your photographer uses, offer automatic focus, or have options for unattended loading (see the table "Scanning the Differences"). No current scanner can fit into a drive bay as did the Nikon Coolscan. The largest scanners require their own table.

Even so, the slide scanners we tested all have certain common features. From the hardware standpoint, they connect to the Mac via the SCSI port; from the software standpoint, they all operate as Photoshop extensions (that's the tip-off that these aren't general-purpose tools—users need to be Photoshop-proficient). The low-cost scanner we tested, Microtek's $749 ScanMaker 35T, comes with Photoshop LE, which is missing some high-end prepress capabilities. One high-end scanner we looked at, the $28,500 Crosfield Celsis C360, comes with its own NuBus SCSI card and its own software for working without Photoshop.

All the scanners handle standard 35-millimeter slides with a 24-by-36mm image area and 2-inch-square size, whether the slides are bound in cardboard, plastic, or glass. Ditto for positive and negative film in either color or black and white. All the scanners handle film in uncut strips of up to six frames, as long as you have a filmstrip holder; the Nikon Super Coolscan can scan only three images at the end of a strip, however. You have to manually turn the film around to scan the other three.

The Microtek ScanMaker 35T and Polaroid SprintScan 35 can scan 36-by-36mm slides, a nonstandard size that lets you scan in portrait orientation without turning the slide 90 degrees. This forces you to give up some effective resolution, since the scanner must cover 36mm rather than 24mm. More commonly, scanners only scan 24mm by 36mm, and the user rotates portrait images in software. Larger scanners can scan 6-by-6-centimeter images (the standard size that comes from a Hasselblad camera) or 6cm-by-7cm images on 120mm or 70mm film; the largest scanners can handle 4-by-5-inch film. The Leaf Lumina can scan any size film since it can focus at virtually any distance from the lens (the bigger the film you're scanning, the farther away you need to get); the Lumina's slide illuminator goes up to 6cm by 6cm, but if you add a copy stand with a light table, the Lumina can handle scans of 8-by-10-inch or even larger film.

**Angle Rotation** Many photographs are unintentionally taken slightly askew, so the subjects don't align with the edge of the slide. Photoshop can rotate such images, but you'll get a better image if you can rotate the slide before scanning. With scanners that only handle images of up to 2 by 2 inches, you cannot physically rotate the slide; but some larger scanners, such as the Leaf products, come with 35mm slide holders that let you rotate slides up to 360 degrees.

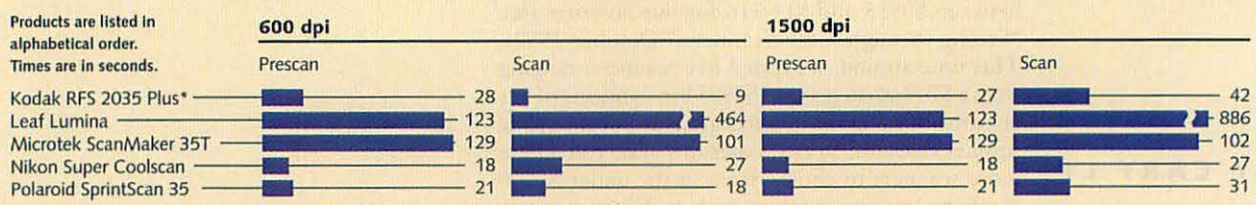
**Loading** You have to load slides into most of the scanners manually, so the slides require attention between each scan. For unattended loading, though, you have a couple of choices. The Nikon Super Coolscan has an optional $685 stack loader that accommodates 50 to 70 slides. For the Kodak RFS 2035 Plus, accessory vendor Maron (602/243-2784) offers three options: a $5375 stack loader accepts up to 300 slides, a $5375 strip loader takes an uncut 36-exposure roll, and a $14,975 bulk feeder accepts 100-

MW LAB

## Slide Scanners: A Speedy Resolution?

The benchmarks below show exactly why choosing a slide scanner is so difficult. The Leaf Lumina promises one of the highest resolutions, but it had the longest scan time. Closest in scan time was the Microtek ScanMaker 35T, the least expensive of the scanners, which delivers the lowest resolution. If you want speed, you'll have to compromise on either price or dpi.

Products are listed in alphabetical order. Times are in seconds.




*Prescan time includes approximately 21 seconds of focus time.

**BEHIND OUR TESTS**

Macworld Lab tested five slide scanners using a Power Macintosh 7100/80 with 35MB of RAM allocated to Photoshop for scanning purposes. All scanning was done through the Photoshop plug-in module supplied by the vendor at a gamma setting of 1. Scanning speeds for both prescans and final scans were timed using a 35mm Kodak Q60 test target. This target was scanned and timed at 600 dpi, 1500 dpi, and the highest resolution the slide scanner was capable of. The chart shows only the first two scores because most of the scanners showed little speed difference between 1500 dpi and their maximum dpi. Resolution was determined by scanning an Edmund Scientific resolution target. We also confirmed that the scanners did indeed scan at their specified maximum resolution, and tested their density measurements to determine the range of brightness they scanned.

**—Macworld Lab testing supervised by Danny Lee**

# Some Clear and Pleasant Ranges

WHILE ALL OF THE SLIDE SCANNERS WE TESTED produced adequate scans, the best results we saw came from the scanners with the highest dynamic ranges, which means they are capable of capturing the details of a photograph whether they're bright or in shadow (no scanner will take a bad photograph and make it better, of course). These were the Leaf Lumina (upper left), the Polaroid SprintScan 35 (middle row, left), and the Nikon Super Coolscan (middle row, right). These three also offered the highest dpi resolutions. Although you might be put off by the Microtek ScanMaker 35T (bottom row) because of its low resolution, its low cost makes it viable for situations where you're not demanding detail.



Leaf Lumina



MARK JOHANN

Kodak RFS 2035 Plus



Polaroid SprintScan 35



Nikon Super Coolscan



Microtek ScanMaker 35T

foot rolls. Additionally, the high-end Crosfield Celsis C360 comes with a tray (resembling the one included with a slide projector) that holds 30 slides (you must slip each slide into a larger frame before fitting it into the tray).

**Focus** The scanners at the low end—the Microtek and the Polaroid—have fixed-focus lenses, adequate for most slides. The others offer either manual or automatic focusing. Mounting slides in glass flattens them for a sharper image, but dirty or uneven glass can mar the image. You can avoid this problem by putting glass only on the back of the film.

**Size** No current slide scanner fits into a disk drive bay the way the recently discontinued Nikon Coolscan conveniently did. Its successor, the Super Coolscan, needs more clearance, especially with its stack loader; the Nikon scanner is about the size of an external hard drive. The toaster-size Microtek ScanMaker 35T and Polaroid SprintScan 35 take a little more space to allow clearance for the negative holder. The Leaf Lumina and the Kodak RFS 2035 Plus take up the space of a desktop computer; the Crosfield Celsis C360 and Leaf Leafscan 45 virtually demand their own table.

**Color Accuracy** All the slide scanners have an ample range of adjustments to calibrate colors for the final reproduction, at least for average images. Overall, color film and color printing inks limit color reproduction more than the scanner does.

## How the Scanners Performed

The most critical feature of a slide scanner is the quality of its scans. All the scanners can produce decent scans from correctly exposed slides of an evenly lit scene. None of the scanners can extract a good picture out of a poorly exposed or poorly focused image; you will always need quality photography. The better scanners have a wide dynamic range (they are able to capture details in both shadow and highlight); the Leaf Lumina and the Nikon Super Coolscan did the best in this regard. They can sometimes overcome minor exposure errors, but none of the scanners can capture the entire dynamic range of such high-contrast photographic film as Kodachrome. You can see this dynamic range on a viewing table or when you project the slide, but compressing the limited dynamic range that the scanners can capture to fit the even more limited range of computer displays and printers is a challenge for everyone who works with photographs.

The ultimate goal is to get a scan that doesn't require rescanning or additional work in Photoshop or another graphics program—a scan you don't have to fight with. But you should always expect to do some tweaking to deal with variations in lighting or the kind of paper stock you print on. The scanners that offer settings for different film emulsions (such as Ektachrome, Kodachrome, or Fujichrome) generally produce scans that require less fiddling in Photoshop.

Macworld Lab tested scanners in several ways, looking at speed (both prescan focusing and scan speed), flare, dynamic range, and resolution.

## THIS SIDEBAR FOR POSITION ONLY

Even if you do not have a slide scanner, you can still digitize slides in several other ways. For high-quality images, you can send slides to a service bureau for digitizing on a drum scanner. Many drum scanners scan only curved surfaces, so a slide must be removed from its mount for scanning; this unfortunately increases the risk of damage. Prices run $25 to $50 per scan; you usually need to send a removable-media disk cartridge along to store the image, so check to make sure your drive is compatible with the service bureau's.

To get reasonably good images, you can send slides out to a Photo CD service. The cost for this type of service runs $1 to $3 per slide plus $15 for the Photo CD disc, which holds 100 slides. The Photo CD stores images in several pixel counts, up to 2048 by 3072 pixels (2000 dpi) in 24-bit color, but the scanning process is automated and geared toward properly exposed images, not those that need adjustments. There is also a Pro Photo CD format that adds a 4096-by-6144-pixel image, with a capacity of 25 slides per disc. Because the $126,000 Kodak Pro Photo CD machine is a specialized tool rather than a high-volume scanning engine, processing houses usually charge about $9 per scan for the Pro format.

On the low end, you'll find some other scanning methods that produce relatively low-quality scans suitable for small finished images in an undemanding application—for example, images you'll use in a company newsletter or, more frequently, FPO images. Such an image is a placeholder until the final image can be scanned with higher-quality methods or until it is stripped into the page with traditional printing techniques.

We looked at four slide-capture cameras, which use an analog color video camera to output images in standard television format; these are mainly intended to put slides on a television screen. You can nevertheless digitize the image with a video-capture board or an AV Mac; most capture boards produce 24-bit color images, although the tonal and color accuracy of a video image do not come near those of the slide scanners we tested. All four cameras have Y/C (S-Video) output in addition to composite video. Tamron (516/484-8880) has three models, all shaped somewhat like a thin coffeemaker. The FotoVix III-S ($1139) handles 35mm film with a 3× manual zoom. The $2299 FotoVix IIIS-D is similar to the III-S, except that it adds a video digitizer and can connect to a Mac via SCSI through a Photoshop extension. The $2469 FotoVix IIX-S has a motorized 6× zoom and handles film up to 6cm by 8cm in its standard holders. You can orient its camera head horizontally and focus the camera at infinity. Fuji's (914/789-8100) $995 Fujix FV-7 has a 2× zoom that also focuses at infinity. Fuji supplies a cut-film holder for 35mm negatives; Tamron offers a negative holder as an option.

For a rough FPO—certainly better than nothing—you can simply project a slide on white paper and aim a camcorder at the projected image. Plan on getting a real image using a slide scanner before you print.




KEVIN CANDLAND

**Brewing a New Scan** Though it looks like a high-tech coffeemaker, the Tamron FotoVix IIIS-D slide-capture camera is one of several digitizing options that work well for FPO scans in graphics departments.

**Speed** Obviously, for scanning, faster is better. Scanning software is a Photoshop plug-in, which means you can never scan in the background. With a fast scanner, such as the Polaroid SprintScan 35, you'll lose less time waiting for the scanner. SCSI can be the speed-limiting factor for a fast scanner; for our tests, we used a Power Mac 7100/80 with 40MB of RAM.

**Flare** We made a test slide by photographing a piece of black paper with a hole punched through it. By scanning this slide we simulated flare—a situation in which light from the bright regions of the slide washes out nearby dark regions, lowering contrast. The punched-hole test can mislead you about a scanner's abilities, though; scanners with a wide dynamic range may create scans where the black area of the test slide is gray, while scanners with a limited range deliver a solid black. The Leafscan 45, for instance, has a wide dynamic range but produced some flare that lesser scanners did not.

**Dynamic Range** We tested dynamic range by measuring the maximum density (brightness) each scanner could distinguish from black. A density level of 3.0 is very dark, passing only 0.1 percent of the light, but is within the range of densities that some films can capture; for example, Kodachrome's maximum density is 3.7. Most of the scanners came close to this; the Nikon did best, with a maximum-density measurement of 3.4. The Kodak RFS 2035 Plus scored a 2.8, and the Polaroid SprintScan 35 and the Leaf Lumina registered a 3.0 maximum-density level.

**Resolution** The scanners all pretty much delivered the optical resolution they promised, which ranged from 1828 dpi for the inexpensive Microtek to 2700 dpi for the more costly Leaf Lumina, Nikon Super Coolscan, and Polaroid SprintScan. For halftone printing, the rule of thumb calls for scanning at 1.7 to 2 times the number of lines in the finished print. Thus for a 5-by-7-inch color halftone printed at 133 lines per inch, you need a slide originally scanned at 1000 dpi; for an

## Scanning the Differences

| Company | Product | Phone | List Price | Maximum Scan Image | Resolution for 35mm slide (in dpi) | Maximum Density Measured | Internal Bits per Color | Focus |
|---|---|---|---|---|---|---|---|---|
| **Benchmarked** | | | | | | | | |
| Kodak | RFS 2035 Plus | 716/726-7260 | $7995 | 24mm × 36mm | 2000 | 2.8 | 12 | auto |
| Leaf | Lumina | 508/836-5500 | $6499 | 6cm × 6cm | 2700[A] | 3.0 | 12 | manual |
| Microtek | ScanMaker 35T | 310/297-5000 | $749[B] | 36mm × 36mm | 1828 | 2.7 | 8 | fixed |
| Nikon | Super Coolscan | 516/547-4355 | $2695 | 24mm × 36mm | 2700 | 3.4 | 12 | auto/manual |
| Polaroid | SprintScan 35 | 617/386-2000 | $1995 | 36mm × 36mm | 2700 | 3.0 | 10 | fixed |
| **Not Benchmarked** | | | | | | | | |
| Crosfield | Celsis C360 | 302/892-7299 | $28,500 | 6cm × 7cm | 2743[C] | [D] | 14 | auto |
| Kodak | Imaging Workstation 2220 PhotoCD | 716/726-7260 | $95,000 | 24mm × 36mm | 2133 | 2.7 | 12 | auto |
| Leaf | Leafscan 45 | 508/836-5500 | $17,000 | 4" × 5" | 5080[E] | 3.4 | 16 | auto/manual |

[A] *1000 dpi for 6cm × 6cm.* [B] *Company's estimated street price.* [C] *1100 dpi for 6cm × 7cm.* [D] *Not measured.* [E] *2540 dpi for 6cm × 9cm, 1500 dpi for 4" × 5".*

8-by-10-inch halftone, you need to scan at 1800 dpi. The Leafscan 45 offers the highest resolution at 5080 dpi.

### The Last Word

In a time when many computer peripherals have become commodities that work alike and look alike, slide scanners are still specialized. The wide variety of models available today are very different in design, nor do they work like each other.

The most important difference between slide scanners is how well they produce usable scans from images with dark shadows. When possible, start with carefully exposed images; an expensive slide scanner and digital image processing don't change the need for quality photography. But sometimes you have no choice; news and sports photography can produce difficult images.

The realistic goal is a scan that you don't have to fight with in Photoshop, one that you don't have to fuss over or rescan. To get consistent results, a slide-scanner operator must have at least a basic knowledge of Photoshop's color- and density-adjustment features and how such adjustments affect the printed image. If you change printers—whether from offset to web, or from one ink-jet to another—you will have to go through another calibration and testing process to adjust your scanner to the new print specs.

No single scanner can meet all needs, and certainly not all pocketbooks. All of the scanners we tested gave acceptable, consistent results. If you want the best possible scans for very-high-quality printing, or if you are a photographer who wants full control over images, the Leafscan 45 stands out for its performance, (as well as for its painfully slow scanning and high price). Leaf says that in January it will replace this model with the $19,999 Leafscan 45HS, a much faster scanner that will offer CMYK output via RGB-to-CMYK conversion. This saves a step over Photoshop by giving you direct control over the printing plate.

The Kodak RFS 2035 Plus is no longer competitive because of its $7995 price; what's more, it's the only scanner that produced a clearly visible flaw in our tests—bad flare in a Kodachrome image. But it's the only scanner able to scan long rolls or big stacks of slides automatically, albeit with expensive accessories.

The Leaf Lumina will appeal to photographers who need a digital camera; the slide-scanning option is a bonus. The three high-end scanners target very different users who have lots of cash.

For those of us without deep pockets, the least expensive scanners should meet most needs. The $2695 Nikon Super Coolscan offers flexibility, particularly if you add its $685 stack loader. The Microtek ScanMaker 35T is a viable choice for users on a budget. The $1995 Polaroid SprintScan 35 delivers solid scans with little fuss or options, and the resolution of more expensive scanners.

In fact, the trend is toward less-expensive slide scanners. The 35mm camera is still a common and inexpensive input device, so when more slide scanners dip under $1000 (as the Microtek machine already has), it's possible that real-estate agents photographing houses and human resources staffers taking pictures of new employees will budget money for slide scanners. Companies like Nikon and Minolta are, or soon will be, offering more options at lower costs. After our testing was completed, Minolta started shipping the QuickScan 35, a 35mm slide scanner with an estimated street price of $1600. Minolta's specs for the QuickScan 35 claim 2800-dpi scans with a 3.0 density range, achieved in under one minute.

Some day these scanners may slide (so to speak) into oblivion, as purely digital cameras replace photographic film (see "Filmless Wonders," September 1995). But digital cameras with image quality that compares with that of a 35mm photographic camera are extremely expensive. Thus the photographic camera will remain the dominant image-capture device for years to come. And as long as we use film, we'll need slide scanners. ■

Contributing editor CARY LU did research in how humans perceive color, at Bell Telephone Laboratories in the 1960s and at the California Institute of Technology in the 1970s, and now writes *PowerBook Notes*.

### SLIDE SCANNERS

MW EDITORS' CHOICE

We looked at scanning speed, resolution specs, and price when we compared slide scanners.

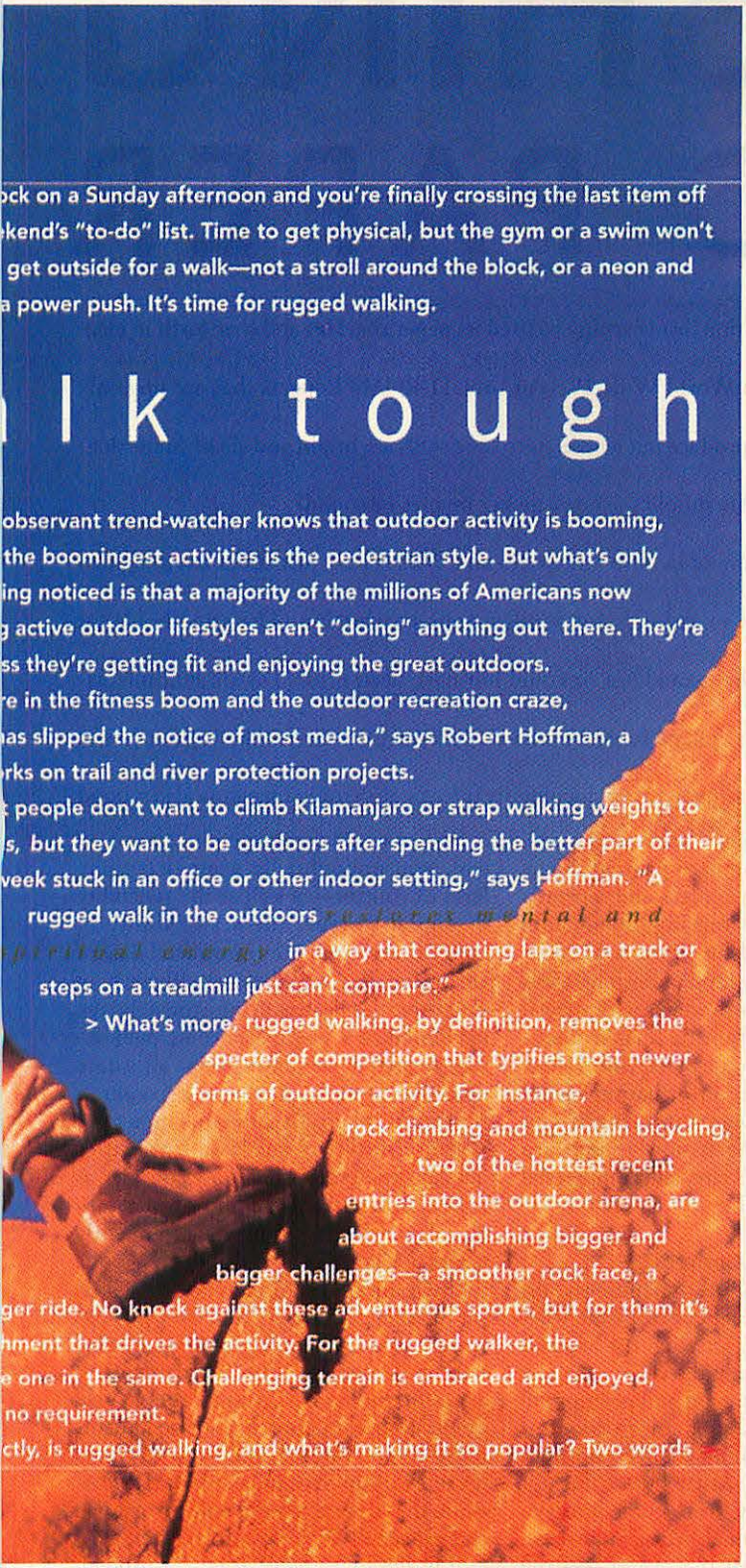
**No choice** With such a wide spectrum of machines, we declined to designate one as best. No single scanner can meet all needs—in terms of resolution, speed, or features—or fit all pocketbooks. The good news is that there are two good choices in the moderate price range: the Polaroid SprintScan 35 and the Nikon Super Coolscan. And the Microtek 35T performs honorably—if slowly—at a much lower price.

# MIKE SALISBURY




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# on PageMaker 6.0.




Mike Salisbury uses Adobe™ PageMaker™ to create designs so powerful they've become part of our collective consciousness. Layouts for Rolling Stone magazine, posters for Jurassic Park and Aliens, and Michael Jackson album covers bear his imprint. Now there's a radically new Adobe PageMaker 6.0 upgrade. "The interface is so natural, it never interferes with my ideas", says Salisbury, "and this new version is really over the top. I'm getting dead-on color from start to finish because it's locked into Kodak's Precision Color Management System." Hot new features include multiple master pages to streamline the creation of different page designs in a single publication; grouping and ungrouping to combine elements into a single movable, editable unit; integrated automatic trapping for color publications; and full compatibility with Adobe Acrobat™ and HTML so any document can be sent anywhere electronically. Adobe PageMaker 6.0 is here, so even if you're not creating professional design, this is the tool to give you professional looking results. Call 1-800-521-1976, Ext. K1272 for more information or visit our web site at http://www.adobe.com/.




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OUR EXPERT **HELPS** YOU TRANSFORM YOUR DOCUMENTS FOR THE WEB AND CDS

# PUBLISHING BEYOND PAPER

BY STEVE ROSELAREN

Do you have information just yearning to shed its paper shackles and soar forth in electronic form on the World Wide Web or on CD-ROM? Reports that are ungainly and expensive to reproduce but whose electronic souls are bright and clear? Static documents that by rights should include moving images or sound?

Now that so many of us have CD drives and Web access, just about anything distributed in print is a candidate for an electronic incarnation. The same holds for many documents that would not or could not have been printed at all: multimedia-enhanced editions; ephemeral information, such as price lists; massive databases; and others. Translating existing documents into an electronic format is also a good way to make little-used archives accessible, and even to prepare printed documents for repeated updates and reprints.

To streamline reusing documents originally intended for print, some vendors of standard desktop publishing tools are working on new products with special features for "repurposing" paper documents in electronic formats. But if your goal is to distribute information rather than to design documents—and if you need to start doing it now—there are plenty of free, shareware, and commercial tools already available.

## Contending for Control

When you distribute documents on paper, you have great control over what they look like, specifying the overall design, the type size and style of each text block, and the alignment and positioning of each element. Using color or a nonstandard paper size may add to production and printing costs, but it doesn't change how quickly the document moves through the U.S. mail. Most important, you can assume that the reader sees the document as you produced it—typestyles, colors, graphics, and all.

When you switch to an electronic format, you undoubtedly want that same level of control—as well as the reliability of digital storage, the searchability of indexed archives, the transmittability of electronic files, and the cost efficiency of electronic duplication. Unfortunately, the likelihood of a single electronic publishing format's accomplishing all these objectives is about like that of Esperanto's replacing all other human languages. Because different needs and priorities demand trade-offs, you must consider at least a dozen standard and proprietary electronic-document formats frequently used on Macs.

By tradition and preference, as well as by differences in function and performance, some cases require a particular format. If your goal is wide distribution to a public audience through the World Wide Web, for example, your documents must be presented in the Web's HyperText Markup Language (HTML) because that's presently the only format you can expect all Web readers to support.

On the other hand, if you're producing an internal policy manual for Mac-using employees on a local network and

MATSU



you're supplying the reader utility, it's your choice—you can produce the manual as anything from a plain ASCII document that employees open with any text editor, to an animated, interactive Macromedia Director movie.

### Format Alternatives

If circumstances do give you a choice, you can select an electronic-document format from a group of five distinct classes: data-only, display-based, structured markup, styled, and proprietary.

**Data-Only Formats** With data-only formats, you supply the data, but the user's software and the decisions the user makes determine how the document appears. ASCII and text documents are the most common members of this class; it can also include simple lists and tables.

The big advantage of these data-only formats is their universality. You can produce documents with just about any word processor, spreadsheet, or database; put them on a CD-ROM or send them over just about any computer link; and be confident that someone with just about any kind of computer is going to be able to read them. And because these documents contain a minimum of data, they're small and transmit quickly.

On the minus side, you don't have much control over how these documents appear, other than the simple formatting you can build in with carriage returns, spaces, and tabs, and you give up all font and structure information.

**Display-Based Formats** You can retain more control of on-screen appearance by turning to utilities that produce display-oriented formats, such as Adobe Acrobat, Common Ground Software's Common Ground, Novell's Envoy, or Farallon Computing's Replica (for details, see "The Paper Chase," *Macworld*, April 1995).

Acrobat, Common Ground, Envoy, and Replica combine image compression with various font-simulation schemes to provide recipients with at least a rough facsimile of the original on-screen document; page layout, typestyle, and other elements resemble those in the original document even if recipients lack the fonts used to create the document. Documents in display-based formats can be created with Acrobat, Envoy, and the others, or increasingly, with output modules offered as options for desktop publishing products. Buying the authoring module gets you a license to distribute a limited reader program with your documents, either embedded in the documents or as a separate utility.

With a full-featured reader program, which you have to pay for, there is also limited hypertext support. All can produce and display documents on some combination of Macs, PCs, and Unix systems. Display-based programs are often used for creating online documents, CD-ROM files, and internal company documents such as employee handbooks.

But in trade for their greater typographic flexibility, these portable-document formats must include more information in the documents they create—a difference that is insignificant on a fast network but that can really slow things down over ordinary telephone lines. Each package also limits you to a single font technology—for example, Adobe Acrobat's PDF only makes a direct translation from PostScript fonts to Adobe's Multiple Master technology, which means you have to substitute the nearest PostScript match if you've used TrueType, Bitstream's TrueDoc, or other font types. As most designers have learned the hard way, it's common to find small differences in spacing or appearance between font technologies even if the fonts are all licensed versions of the same design. Such limitations can narrow your design choices, restrict you to generic font families, or eliminate the searchable underlying text from the output document. And even though most portable-document tools are in their second or third versions, their ability to create a faithful reproduction of a document is less than perfect.

Furthermore, because the display-based formats are proprietary and the vendors make their money from selling their tools and licensing them to other software vendors, you have to settle for a restricted set of compatible packages.

**Structured Markup Formats** Until recently, you had to work for very large government contractors to encounter structure-based documents. These formats—including SGML (Standard Generalized Markup Language) and ODA (Office Document Architecture)—mark up, or *tag*, all the elements of a document such as headlines and paragraphs; the tags describe what role the elements play and the rela-

#### PAPER OR PLASTIC?

If distributing documents digitally is attractive, but technical or economic barriers keep you from doing so, CD-ROM publishing is often a good compromise. Typically, a CD-ROM can deliver about 650MB of information at rates 8 to 30 times as fast as a common 14.4-Kbps modem.

You can treat a CD-ROM as a large floppy disk and access files with your regular document-creation and -viewing programs. But if you want to direct the way information is presented, you'll probably want to pick a disk-oriented presentation program.

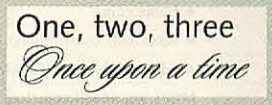
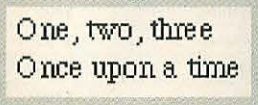
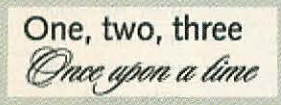
Apple has provided a number of presentation programs with each Macintosh system over the years—including the Director player, HyperCard, the HyperCard player, and now the AppleGuide player. All can be used on CDs or over local networks.

But because the assortment has changed so often—and Apple hasn't really done a very good job of communicating to users that it has such programs—you still may have to supply reader software on your CD-ROM. And if some of your readers don't use Macs, you should note that only some of these packages have Windows equivalents.

So far, you can't use CD-access programs as client-server solutions over the Internet. But that should change soon. Netscape plans direct support for Director and Acrobat files in an unspecified future release of Netscape Navigator.

## THREE PRIMARY MEDIA: FACTORS YOU NEED TO COMPARE

**Producing documents for publication on paper, on the Web, and on CDs require producers, distributors, and ultimately recipients to make choices and compromises.**

| | PAPER | THE WEB | CD-ROM |
|---|---|---|---|
| DESIGN | Image quality depends on paper, printing process | Images are low-resolution and color-depth is shallow | Can provide low- and high-resolution images |
| |  |  |  |
| | Producer has total typographical control | Producer is restricted to a few fonts and rough control of size, bold, italics, and alignment. | On-screen quality limited by recipient's display size, quality |
| |  |  |  |
| | Distributor, recipient cannot alter type or design | Distributor or recipient can alter type | Producer can include proprietary type-display utility |
| STRUCTURE, NAVIGATION | Formats are static (magazines, books, and so on) | Format depends on interpretation of HTML tags | Format can be static or modifiable depending on underlying engine |
| | Can navigate by page numbers, index, TOC | Can navigate by scrolling, text-searching, URL links, typographical cues, newsgroups, mailing lists | Producer can use hypertext, animation, other programmatic navigation tools |
| DISTRIBUTION, STORAGE, RETRIEVAL | Can ship to recipient or sell in stores<br>Convenient to use | Distributed online; requires server<br>Recipient must have computer | Can ship to recipient or sell in stores<br>Somewhat inconvenient to use; recipient must have computer |
| | Content not searchable electronically | Many search engines available | Author can include proprietary search engine |
| | Content permanent | Content can change frequently | Content permanent |

tionship between them but leave the details of how each element is displayed to the reader program. For example, you might mark up a document with a certain tag for all headlines, and in the software used to read the document there could be—must be—a description of how to interpret and display all text marked with the headline tag.

Structured markup has suddenly become nearly ubiquitous because the World Wide Web's HTML is a subset of SGML—Web pages are structured documents with tags that are interpreted by the recipient's Web browser, which combines communications functions with the HTML interpreter.

Just about every Mac program that handles text has, or will soon have, an option to output files in HTML format; such programs include WordPerfect, Microsoft Word, BBEdit, Nisus Writer, ClarisWorks, and all programs using the XTND output filters. So you may already have an HTML authoring tool. Or you might prefer a dedicated Web editor such as Navisoft's NaviPress or SoftQuad's HoTMetaL Pro (for more on editing Web pages, see "Build Your Own Home Page," *Macworld*, November 1995).

Likewise, Web browsers are fast becoming commonplace. In addition to well-known commercial programs, such as Netscape Navigator and NCSA's Mosaic, and more than half a dozen widely available free and shareware packages, all of the major online services have added Web browsers. Almost all have a local-document mode so that you can view and correct HTML documents as you create them before uploading them to the Web.

You're unlikely to run across structured markup formats, except HTML, because these nongraphical, code-based standards are used largely in the Unix and mainframe worlds. The only Mac-based SGML editor you're likely to find is Author/Editor from SoftQuad—and ODA is confined largely to Japan and Europe. But if you have hundreds of thousands of pages to serve up and want to retain control over their structure, yet provide complete platform independence so that recipients on any computer system can format and read your documents as they see fit, a structured markup system could be attractive.

With any structured format, you gain the ability to produce output for a wide range of systems but at the price of limited control on any one system. A tagged, structured document can be interpreted for print documents, electronic versions, indexes, text bases, CD-ROM files, and so on.

**Styled Formats** A WYSIWYG word processor or page-layout program works exactly the opposite way from a structured markup program, saving information about what a document looks like but little or no information about what its elements mean.

For example, word processor and page-layout documents usually contain no clue for users or other programs about whether you've italicized the word *Philadelphia* to emphasize it or to indicate that you're referring to the movie. If it's the latter and you change the format for movie titles, you have to find and change each occurrence of *Philadelphia* by hand.

## Taking It to the Net: Tools for Online Publishing

| Product | Uses | Vendor | Price | Phone | Web Address * |
|---|---|---|---|---|---|
| Acrobat Exchange 2.0 | Portable documents | Adobe Systems | $195 | 415/961-4400 | ★ adobe.com/Acrobat/Acrobat0.html |
| Common Ground 1.12 | Portable documents | Common Ground Software | $189 | 415/802-5800 | ★ commonground.com/ |
| Envoy 1.0 | Portable documents | Novell | $149 | 801/225-5000 | http://wp.novell.com/tree.htm |
| Replica 1.0 | Portable documents | Farallon Computing | $99 | 510/814-5000 | ★ farallon.com/www/product/rep/repmac.html |
| Mosaic 2.0b | Web browser | NCSA | free | none | ★ ncsa.uiuc.edu/SDG/Software/MacMosaic/MacMosaicHome.html |
| Netscape Navigator 1.1 | Web browser | Netscape Communications | $39 | 415/528-2555 | ★ netscape.com/comprod/products/navigator/version_2.0/index.html |
| BeyondPress 1.0 | HTML output from QuarkXPress | Astrobyte LC | $595 | 303/534-6344 | ★ astrobyte.com |
| ClarisWorks 4.0 | HTML output | Claris | $129 | 408/987-7000 | ★ claris.com |
| FrameMaker 5.0 | HTML, PDF output | Adobe Systems | $895 | 408/975-6000 | ★ frame.com/ |
| Nisus Writer 4.1 | HTML output | Nisus Software | $395 | 619/481-1477 | ★ nisus-soft.com/~nisus/ |
| PageMaker 6.0 | HTML, PDF output | Adobe Systems | $895 | 415/961-4400 | ★ adobe.com/Apps/PageMaker.html |
| WordPerfect 3.5 | HTML output | Novell | $189 | 801/225-5000 | http://wp.novell.com/tree.htm |
| NaviPress 1.01 | Web page design | NaviSoft | $99 | 800/879-6882 | ★ navisoft.com. |
| BBEdit 3.5 | HTML editor | Bare Bones Software | $119 | 508/651-3561 | ★ tiac.net/biz/bbsw/bbedit.html |
| HoTMetaL 2.0 | HTML editor | SoftQuad | free | 416/239-4801 | ★ ptgs.com/links/sfq/sfqhome.html |
| HoTMetaL Pro 2.0 | HTML editor | SoftQuad | $195 | 416/239-4801 | ★ ptgs.com/links/sfq/sfqhome.html |
| Batch It 1.0 | Graphic file-format converter | Gryphon Software | $199 | 619/536-8815 | ★ gryphonsw.com/ |
| DeBabelizer 1.6 | Graphic file-format converter | Equilibrium | $399 | 415/332-4343 | ★ equil.com/ |
| MacLinkPlus/Easy Open Translators 8.0 | Text file-format converter | DataViz | $109 | 203/268-0030 | http://199.186.148.129/ |
| Word For Word 6.1 | Text file-format converter | Mastersoft | $149 | 602/948-4888 | ★ chaco.com/~mastersoft/ |
| SoundHack 0.803 | Audio file-format converter | Frog Peak Music | $50 | 603/448-8837 | ★ smallmedia.com/bin/fgp.cgi |
| Sound Hack 0.86 | Audio file-format converter | Tom Erbe | free | none | http://shoko.calarts.edu/~tre/tech.html |
| uLaw 1.4 | Audio file-format converter | Rod Kennedy | free | none | ftp://ftp.ncsa.uiuc.edu/Mac/Mosaic/Helpers |
| HyperCard 2.3 | Self-running files for CD-ROM | Apple Computer | $99 | 408/996-1010 | ★ info.apple.com/productinfo/datasheets/as/hypercard2.3.html |
| SuperCard 2.5 | Self-running files for CD-ROM | Allegiant Technologies | $749 | 619/587-0500 | ★ allegiant.com/ |
| Knowledge Retrieval System 3.0 | Text databases for CD-ROM | KnowledgeSet | depends on use | 415/254-5400 | ★ kset.com |
| Personal Librarian 4.15 | Text databases for CD-ROM | Personal Library Software | $495 | 301/990-1155 | ★ pls.com/products/pl.html |

** Addresses marked with a ★ must be preceded by http://www.*

Almost all word processor documents can be considered styled-text documents, even though publishers often keep their formats private to control their use. Microsoft's Rich Text Format, or RTF, is an open format with a published description, which has made it the most widely supported styled format on the Macintosh. PostScript can also be used as a styled format, but its difficult structure and syntax make it unpopular for document exchange.

**Proprietary Formats** Many proprietary formats are designed for or have been adapted for electronic publishing. Adobe PageMaker, for example, can present files designed as paper documents as on-screen slide shows. You can display Apple's HyperCard and Allegiant Technologies' SuperCard stacks on screen or use them to store information you plan to print out. More extensive document-management and -presentation systems, such as Personal Librarian from Personal Library Software and Knowledge Retrieval System from KnowledgeSet, are particularly geared for retrieving documents from large collections on CD-ROM or local networks.

### Dual-Use Documents

If your goal is to extend the domain of your paper documents into cyberspace, look at what your current paper-oriented programs support before you pick an electronic format.

If you're using PageMaker, for example, the new version, 6.0, can output your page-oriented documents in HTML or PDF format. Adobe's FrameMaker supports these options as well as its proprietary FrameViewer format, which is functionally somewhat akin to PDF. Similarly, you can produce electronic QuarkXPress output using extensions such as the HTML-oriented BeyondPress from Astrobyte. WordPerfect can export in HTML format, and Microsoft is preparing an HTML filter for Word 6.

If you expect to use the same content to produce several versions of a document, there are, at least in theory, advantages to starting with a format designed for translation, such as HTML (or SGML). The structured nature of these formats should support translation into current and future document formats without a loss of information.

But in practice, the now-standard HTML version 2.0 is too limited to handle much more than very simple documents. Eventually the world will standardize on a version of HTML—perhaps version 3, or version 3 with some nonstandard extensions pioneered by Netscape. Until then, to manage reusable content you must choose between preserving information about a document's appearance, such as fonts, and preserving document-structure information,

such as chapters. Or you may be better off using a common word processor to distribute your documents in a styled format, and hoping that recipients have the correct fonts installed.

### Translators

If you're confident a file will be read by just one program for just one purpose, you don't have to worry about what format that program uses. But if your file is going out to readers using various programs, you'll need to run it through the appropriate import filters, translator programs, and similar utilities.

Dozens of free, shareware, and commercial translator programs are available for converting between formats (see the sidebar "How to Stay Current on Online Publishing"). A number of filters let programs that support XTND technology (including popular ones like ClarisWorks) read and write electronic publishing formats, such as RTF and HTML. Several commercial packages—Mastersoft's Word for Word Macintosh 6.1 and DataViz's MacLinkPlus are two—also offer filters for translating these types of formats.

These programs generally do an excellent job with the mechanics of format translation. If you have simple, straightforward documents, this format-translation approach can be the best choice. But for projects that are more complex, the results tend to be less satisfactory. After all, what should a translator program do with a footnote when converting a document to a format, such as HTML, that doesn't support footnotes? What should it do with double columns, strikeout text, or anything else that doesn't map directly into the formats you're working with?

### Wondering about the Web

Picking an overall format for your electronic documents is an important first step, but it leaves you with other important decisions to make about details—and about how to get your existing documents into the right format for electronic distribution.

For example, if you settle on HTML and plan to distribute your information on the Web, you still need to convert your Mac graphics to the Web's graphics formats (see the discussion that follows under "Graphics Formats" for details). And you still have to decide which version of HTML to support. More than most evolving standards, the HTML language is changing rapidly. Most authoring and browser programs are based on the current HTML 2.0 standard. Many newer browsers can also interpret the Netscape extensions, which add such features as tables. However, some HTML purists oppose the Netscape extensions because they violate the markup language's design goal, which is to produce a document structure completely independent of the application that reads it. More important, your audience may not have an application that can interpret the Netscape extensions.

Most software publishers plan to switch over to the more advanced HTML 3 this fall if the standards committee adopts the specification as planned. Proposals are also circulating to allow Web documents to include style sheets for better graphic and typographic control.

### Graphics Formats

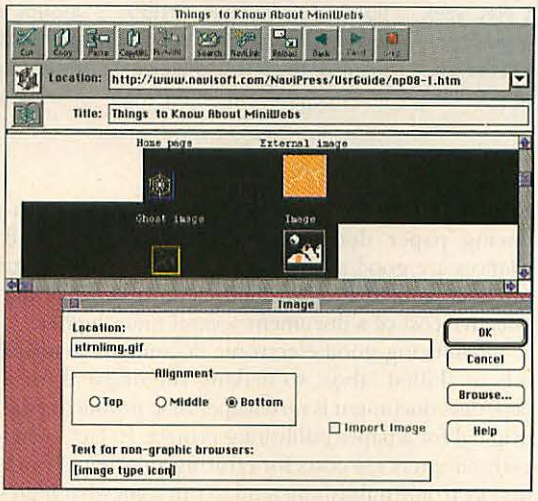
Then there's the question of graphics formats. All Web browsers that can show images support GIF (Graphic Interchange Format) images. Many also support a special interlaced GIF version that shows the overall forms of an image before downloading the details so that users can decide whether to wait for the full transfer.

But because GIF shows only 256 colors and provides less compression than other formats—and because Unisys has clouded the future of GIF by asserting patent rights to a key part of GIF's compression algorithm—many Web browsers have added internal or external viewers for files compressed using JPG (short for JPEG, or Joint Photographic Experts Group).

If you have images in other graphics formats, chances are you can convert them with commercial products such as Equilibrium's DeBabelizer or Gryphon Software's Batch It. Many high-end graphics programs can read a variety of formats and write GIF files. You may lose some color clarity and detail when you go from 16-bit or 24-bit color to GIF or 8-bit JPG, but JPG produces smaller files. That, in turn, translates to quicker downloads over the Web or more pictures per CD.

When a publicly distributed Web document contains sounds, users assume they're in the **.au** (audio) format, standard on Unix. Few Mac programs create **.au** files, but translators such as SoundHack or uLaw can convert common Mac sound formats to **.au**.

But before adding numerous elements, keep in mind that many Web surfers routinely turn off image viewing in their Web browser to speed up page dis-




**Creating Web Pages** America Online–owned NaviPress is a tool kit for creating Web pages. While specifying the location of linked graphics and their alignment on the page, you can also include a note that will appear on any browsers that can't show graphics.

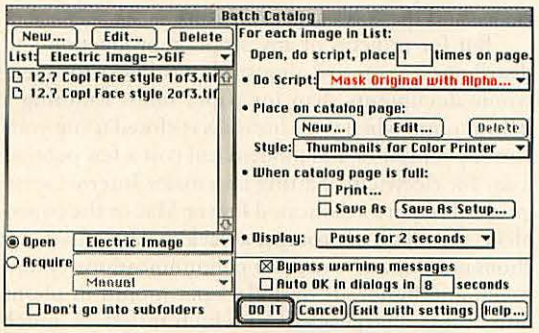



**Image Conversion** One of DeBabelizer's many batch-mode functions. Before DeBabelizer converts these Electric Image–format files to GIF, you can instruct the graphics-processing utility to prepare a catalog of thumbnails.

plays; others use text-oriented browsers such as Lynx that don't include any picture information. And, of course, remember that some users will view your page on a monochrome screen.

### Convincing the Bean Counters

Finally, you must consider the costs. Unless you contract out the job, it's hard to figure the true cost of producing the master copy of a paper document. How you apportion the cost of computers, salaries, and other indirect costs is a question of local practice. But once you have a master, reproduction costs range from 2 or 3 cents per page for inexpensive black-and-white documents up to several dollars per page for short-run high-quality full-color printing. Paper prices are notoriously variable, and even printing costs fluctuate. But over the years, the cost of producing paper documents has trended up. And chances are good a paper document won't reach its intended audience. That inefficiency can make the effective cost of a document several times higher.

Producing good electronic documents involves lots of skilled labor, so making the original for a paperless document is no cheaper than producing the original for a paper publishing project. In fact, many early adopters say costs for creating an original work for electronic publishing tend to run somewhat higher than for paper, because the industry has less experience and the tools are not mature.

But for projects of any scope, reproduction and distribution costs are almost always lower for electronic documents than for paper ones. Running a BBS at night when your business is closed using your current computer and modem can cost a few pennies a day for electricity. Setting up a major Internet server could require a dedicated Power Mac or the equivalent, gigabytes of storage, a backup system, several thousand dollars' worth of communications equipment, and hundreds of dollars per month in phone and access charges—all of which might be much cheaper over time than printing and postage costs. Less costly still is renting online Web space for a few dollars per megabyte per month. For internal network publishing projects, you can make use of your organization's existing company servers and network.

### The Last Word

Paper-based publishing isn't exactly a dying industry—chances are good that you're reading these words on the remains of a tree. But as the capabilities of display screens improve, as the cost of digital transmission continues to fall, and as the processing power, memory, and software of personal computers improve, we'll distribute more of our documents with electronic devices than with mechanical ones.

Already, the 14.4-Kbps bottleneck for online access is falling, with ISDN offering ten times the throughput. Cable modems promise improvement by another order of magnitude. Higher capacity CD-ROM drives are also on the horizon, promising four to ten times the room for images and video. Cheaper mass storage will let us keep more information locally and depend less on service providers.

With greater transmission bandwidth and better tools, we'll be able to add richer elements, such as sound and video; more interaction; and more intelligence, such as search and publishing engines that learn our personal preferences. Three-dimensional desktops and similar complex metaphors will let us navigate a multifaceted document space, making use of our human ability to recognize faces and places.

All these advances will enable us to create, store, ship, and find electronic documents better than we can today. But for the foreseeable future, we remain prisoners of one major bottleneck—no matter whether those documents arrive on screen or on paper, we still have to read them. **m**

STEVE ROSELAREN is a Berkeley, California, freelance writer who's followed the Mac since its inception.

## HOW TO STAY CURRENT ON ONLINE PUBLISHING

In the future, it may be common to read documents on paper or from a CD and automatically get an update to the information they contain from information provided online. You can't do that yet, but we can point you to a few Web sites that offer the latest information on Macintosh-based electronic publishing.

For general searches, try **electronic publishing** at Yahoo (**http://www.yahoo.com**); InfoSeek's Net Seek (**http://www2.infoseek.com**); or the W3 Catalog at the University of Geneva's Centre Universitaire d'Informatique (**http://cuiwww.unige.ch/w3catalog**). Apple's Web pages are still very much under construction, but a good starting point is the main server (**http://www.apple.com**). For a site focusing on HTML tools, try the HTML Converters page at the W3 Consortium (**http://www.w3.org/hypertext/www/Tools/Filters.html**), and for discussions on the future of the Web, see the W3 Consortium's home page (**http://www.w3.org**). You can find many of the HTML shareware and free programs in the Mac program archives (**http://mirror.apple.com**).

Once you follow those links, you'll find many sites with free software and shareware. Most software online is compressed and encoded in BinHex 4.0 format (indicated by the file-name suffix **.hqx**). If your Web browser doesn't automatically expand such files, you need a copy of an expansion program such as Aladdin Systems' free StuffIt Expander, from most user groups and online services, plus Macworld's Web site (**http://www.macworld.com**).

As with Web sites on other topics, you may have to poke around a bit. URLs come and go, and while they're running they may be overloaded and hard to access. But once you get into one of these sites, just follow its hypertext links and eventually you'll get to most of the important spots.

As always, please honor shareware agreements. Shareware isn't free—it's merely free to try out. Some authors require a payment for use beyond a specified trial period; some only request a payment; and some request only a postcard, E-mail, or other act of acknowledgment.

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connected equipment, and can suit any application, from servers and PCs, to fax and satellite systems.

### PROTECT YOURSELF OR KICK YOURSELF...

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**MacWEEK** *"Ultimately, it's more a question of when - and not if - you should buy a UPS... UPS power protection has never been cheaper or more convenient"*

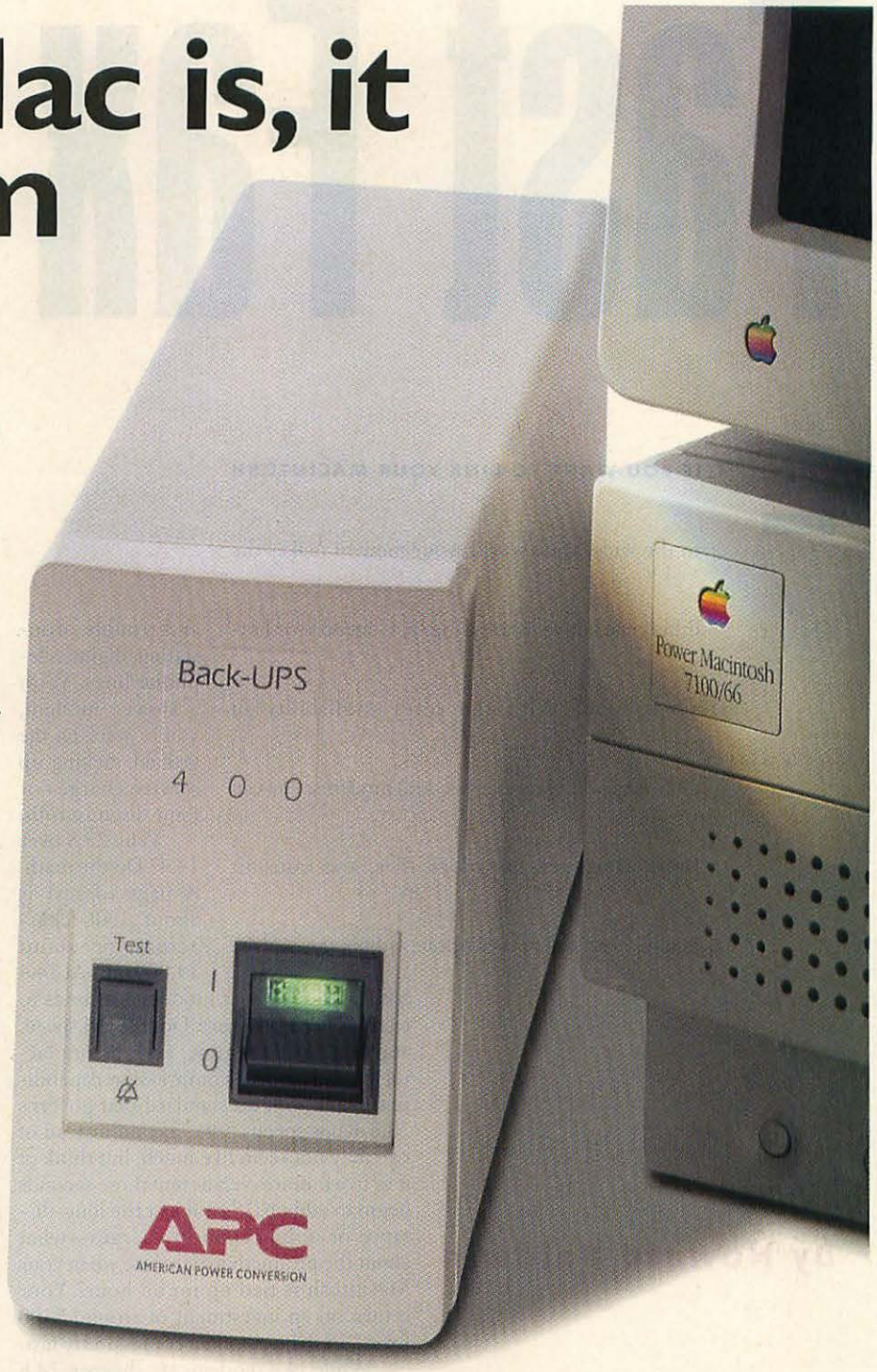
**MacUser** *"If you have a server and don't have a UPS, you're playing with fire."*



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*Dept. D7*

# Fast Fax Mod

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**IF YOU WANT TO LINK YOUR MACINTOSH** to the wide, wide world, your modem makes the difference between traveling by Concorde or hot-air balloon. With the ready availability of 28.8-Kbps (kilobits-per-second) modems, you can fly the Internet, download files, and transmit graphics faster than ever before without the expense and trouble of installing digital telephone lines. With a slower modem, you're stuck on the ground, racking up service charges or long-distance tolls.

Why 28.8 over 14.4? Do the math. A page of text is about 3000 characters, or about 24,000 bits. At 14.4 Kbps, it'll take your modem 2 seconds to transmit a page of text. Double the speed, and you halve the time, even before factoring in the data-compression capabilities of the V.42bis standard that governs 28.8-Kbps speeds. One second instead of two may not seem like much, but think of it as five minutes versus ten: those seconds begin to add up. It's not just the long-distance or online connect charges—what about the productivity you lose when your Macintosh is tied up for an hour? Your return on an investment of around $300 for a 28.8-Kbps modem comes pretty fast.

**by Howard Baldwin**

While 14.4 modems are cheaper, 28.8 modems have definitely reached the commodity-product stage. None of the modems we looked at performed so poorly that we'd call them unacceptable. Technical support, on the other hand, tells a different story: the vendors' support was almost uniformly bad—mostly due to their ignorance of the Mac, but even Mac-only Global Village scored poorly for tech support (see the table "Fast Facts on Fast Modems"). Except for the bundled communications software, it doesn't matter much if a modem is packaged for a PC or a Macintosh. Working with our sister publication's PC World Test Center, Macworld Lab tested 13 modems (we attempted to test Telebit's TeleBlazer but ran into technical problems), using a telephone-line simulator to check how well they work by measuring reliability (how well the modems cope with real-world telephone lines) and throughput (how fast two modems exchange data over phone lines).

In testing modems, we've discovered that working with a line simulator under laboratory conditions produces more accurate results than attempting to use existing telephone lines. The test equipment we used, from Telecom Analysis Systems, provides as exact a replication as possible of many phone conditions, to show the modems' capabilities accurately.

We also ordered Macintosh-specific bundles for all the modems, to see what you get when you open up the package. We wanted to examine the modems' designs and whether the software and manuals match the modems in quality. After conducting these objective and subjective tests, we *almost* designated two modems as our Editors' Choice—they excelled in price and performance as well as features and design, but they just didn't make the grade on tech support.

### How Fast Is Fast?

To determine the winners in our performance tests, we averaged the results of the throughput and reliability tests (see the benchmark "Are 28.8-Kbps Modems All the Same?"). Four led the pack with excellent scores in both tests: the Motorola PowerClass 28.8, the GVC Technologies XM288E (not to be confused with a




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**Circle 196 on reader service card**

# No matter how fast can't outrun a power

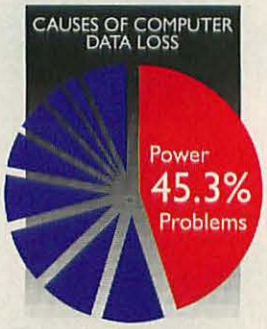
## New Back-UPS: reliable power for your Mac

Just don't have the time for power problems on your Mac? Don't worry. They'll make time for you. It's not if a power problem will occur, but when. Due to household appliances, poor wiring, bad weather or even other office equipment, power problems are as inevitable as death and taxes. You can't run, but you can hide, behind APC protection.

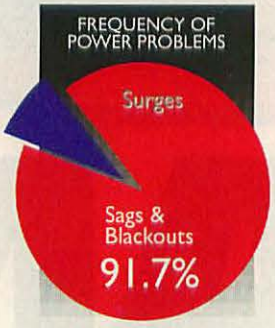
### IN THE NEXT THREE MONTHS, MORE THAN 30,000,000 PCs WILL BE HIT BY POWER PROBLEMS...

A study in a recent *PCWeek* showed that the largest single cause of data loss is bad power, accounting for almost as much data loss as all other causes combined. Every Mac plugged into an outlet is vulnerable. In fact, you have better odds of winning the lottery than escaping power problems. One study found a typical computer is hit 100 times a month, causing keyboard lockups, drive damage, or worse.

Simply put, if power problems are the least of your troubles, you've got one chance to keep it that way. You insure your car and home with the best policy you can afford. It just doesn't make sense to leave your Mac (which is at far greater risk) vulnerable to loss or damage.




Source: Contingency Planning



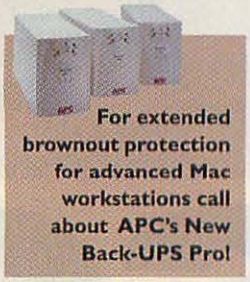

Source: Bell Laboratories

*Power problems are the leading cause of computer data loss, while the most frequent type of power problems are undervoltages and blackouts, which surge suppressors alone are powerless to protect against.*

### WHY A $119 APC UPS COSTS LESS THAN A $9.99 "SURGE PROTECTOR"...

Contrary to most people's belief, a Mac alone has more protection built into it than a low-end "surge suppressor," which is usually nothing more than a well-packaged extension cord. In other words, going without protection is as good as under-spending on one of the most important computer decisions you'll make.

And since sags and blackouts represent more than 90% of power problems likely to hit your Mac, even quality, high-performance surge suppressors are literally powerless to protect your Mac from data loss.




That's why you need instantaneous battery backup power from an APC Uninterruptible Power Supply to prevent keyboard lockups, data loss, and crashes. With an APC UPS, you get six times the protection of a high-end surge protector for little more than twice the price. And $119 is much less expensive than false peace of mind.

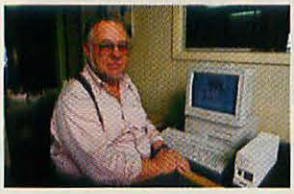
Add APC's PowerChute* and you also get the security of graceful, unattended safe shutdown. Whether your running System 7.5 on your PowerMac, Quadra, IICI or on any other Mac system, PowerChute will shutdown your system and your applications in the event of an extended power failure.

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### More than 3,000,000 satisfied customers count on APC reliability



*Modern Press President Stephen Hopkins explains, "I protect my Mac Performa with a Back-UPS 400 and the unit works great. The Mac handles all bookkeeping, administrative and estimating functions for the company. It is a critical piece of my business. Unfortunately, we are located in an industrial park... a nice way of saying that our power fluctuates a great deal. After five years of reliable performance from my Back-UPS, power problems are no longer my concern. I can focus my energy on my business instead."*



*At Cellophane Square, Seattle's best known independent and alternative rock record store, Steve Marcus, Product Buyer, counts on APC to keep his Mac II SI and POS terminals running reliably. "The building where we started out was ancient and full of power problems. I lost lots of purchasing and product related information... until we invested in APC. I chose APC because they offer the most reliable product. I haven't been proven wrong yet. Problems continued in the building, but they were no longer a problem for us."*



*"We have over 30 APC units on our Macs," says Tim Girvin, principal of Tim Girvin Design, Seattle, WA. "Why do we protect every computer in the firm with an APC? As design consultants working on projects throughout the United States and Asia, 100% productivity is critical to project management. We cannot afford lost files due to power outages because of the complexity of many of the design programs we manage. Lost projects due to unprotected files is simply irresponsible. With APC in place, power problems are not even an issue, we are protected."*

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# ems




**They Coulda Been the Contendahs** The GVC-Maxtech and U.S. Robotics modems came closest to earning our Editors' Choice award.

DARRELL WILLIAMS

## Race online with Macworld Lab's picks of the best 28.8-Kbps modems

Global Village product, this modem is sold by Maxtech), the U.S. Robotics Mac & Fax Sportster 28.8 V.34 Faxmodem, and the AT&T DataPort Express. Both single-modem throughput and end-to-end performance are important: while some models did well in the reliability tests (the Archtek SmartLink 2834A and the Global Village TelePort Platinum, for example), and others did well in throughput (the Hayes Optima 28.8 and the Zoom Telephonics Zoom Fax-Modem), their overall scores weren't as high. Still, all the modems delivered results that will support anyone's flight into cyberspace.

### Extras to Look For

Though 28.8 modems may be commodity products, several of them give you more for your money or have neat features that stand out.

**Caller ID** The Zoom Fax-Modem, the SupraFaxModem 288, and the Logicode Quicktel 2814XVM offer Caller ID, if that service is available in your area; this feature helps you identify who is calling your modem.

**Answering-Machine Smart** The SupraFax Modem lets you put the modem on the same line as an answering machine so you don't need multiple phone lines—it

distinguishes between voice and data and automatically switches between the two.

**Upgradable** The Supra and the Archtek SmartLink incorporate flash ROM so you can download firmware upgrades. This will let you upgrade your modem as the International Telecommunications Union standardizes on faster speeds—if the modem vendor releases upgraded software.

**Noise Control** On behalf of those sitting in office cubicles surrounded by numerous other modem users, we applaud the volume-control knob on the U.S. Robotics Sportster (other units control volume through unwieldy software).

**Good Design** You may not think of design as a feature, but when you look at a group of external modems together, the differences between good design and bad design become obvious. Most modems look like they were modeled after squashed subway cars or hydrofoils—with one dramatic exception. Logicode's sweeping Quicktel modem looks like a piece of the Sydney Opera House. It stands with the Apple PowerBook 500 series and the Connectix QuickCam digital camera in its uniqueness. The Quicktel and Global Village modems are the only ones that include ARA (Apple Remote Access) scripts. Unfortunately, the Quicktel's unusual shape means you can't stack your telephone on top of it.

**On/Off Switches** Among the squat alternatives, though, there are other things to look for. For instance, one of the last things you want to have happen during the 59th minute of a one-hour download is to turn off the modem accidentally. That's why we like the recessed on/off switches on the modems from GVC and AT&T; others, like the Archtek, have a safe power button that must be purposefully depressed, while the Global Village TelePort Platinum has a plastic toggle switch for the same purpose. Others have metal switches that can easily be switched off if bumped accidentally.

**Cables** Another design feature we liked: Global Village builds the serial cable into its TelePort Platinum modem, so that it will never accidentally come loose. Global Village can do this because it's the only company in the roundup that builds only Macintosh modems, and the company says its modems have software enhancements that boost throughput on the Power Mac. (Because we tested the modems on a simulated telephone network, our results are independent of what CPU the modem is attached to.)

**Status Info** Almost all the modems have a plethora of lights that indicate modem activity, designated by abbreviations resembling postal codes. Logicode is the only manufacturer to use icons—symbols such as a ringing telephone to indicate carrier detection and a telephone with an *x* through it to show that the phone is off the hook. Activity indicators are important. We especially like the indicators on the Zoom and Telebit modems (identical, save for the company name) that show transmission speed; they also have a light indicating whether incoming faxes are waiting, a feature that works only if your fax software supports it.

**Basics** All these units include the appropriate phone cords and serial cables. All provide 14.4-Kbps fax capability. Most offer a five-year warranty, although several skimp with a two-year warranty, while Logicode offers a lifetime warranty. All but the Telebit and Boca modems include telecommunications software—MicroPhone LT, MacCom Center, or another package—though some include QuickLink II, which is obsolete and has been discontinued by its developer.

The modem with the best overall test results, Motorola's PowerClass 28.8, has a suggested retail price of $375, though the company estimates a street price of $249. Multi-Tech Systems' MultiModemPCS has a street price of $599, but that's because it is the only modem of the batch that can transmit voice and data simultaneously over regular phone lines. Hayes's Optima 28.8 offers only average performance overall and carries a suggested retail price of $579; that's at the

## Fast Facts on Fast Modems

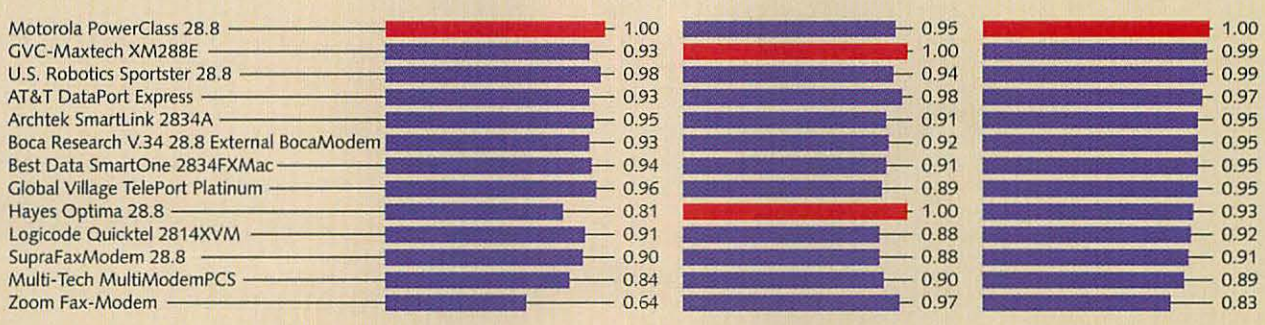
| Company | Product | Phone | Price (list/ company's estimated street) * | Cables Included (phone, serial, power) | Tech Support | Warranty |
|---|---|---|---|---|---|---|
| Archtek America | SmartLink 2834A | 818/912-9800 | $259/NP | all | very good | 5 years |
| AT&T | DataPort Express | 813/530-2000, ext. 8407 | NP/$199 | all | poor | 5 years |
| Best Data Products | SmartOne 2834FXMac | 818/773-9600 | $349/$199 | all | acceptable | 2 years |
| Boca Research | V.34 28,800 bps External BocaModem | 407/997-6227 | $279/NP | all | poor | 5 years |
| Global Village | TelePort Platinum | 408/523-1000 | $279/$235 | all | poor | 5 years |
| GVC Technologies (Maxtech) | XM288E | 201/586-3008 | $219/$179 | all | unacceptable | 5 years |
| Hayes Microcomputer Products | Optima 28.8 | 404/840-9200 | $579/NP | all | acceptable | 5 years |
| Logicode Technology | Quicktel 2814XVM | 805/388-9000 | $299/$230 | all | poor | lifetime |
| Motorola | PowerClass 28.8 | 708/538-4800 | $375/$249 | all | poor | 5 years |
| Multi-Tech Systems | MultiModemPCS | 612/785-3500 | $899/$599 | all | poor | 2 years |
| Supra | SupraFaxModem 288 | 360/604-1400 | NP/$250 | all | unacceptable | 5 years |
| Telebit | TeleBlazer | 508/441-2181 | $349/$299 | all | poor | 2 years |
| U.S. Robotics | Mac & Fax Sportster 28.8 V.34 Faxmodem | 708/676-7010 | $279/$219 | all | unacceptable | 5 years |
| Zoom Telephonics | Zoom Fax-Modem | 617/423-1072 | $269/$249 | all | unacceptable | 7 years |

*Technical-support ratings are based on a series of calls made to each company by Macworld staffers posing as customers to gauge the accessibility, helpfulness, and accuracy of the company's support technits, to derive the final rating. Ratings are for companies, not individual products, and we call only those companies whose products Macworld Lab tests. * Actual selling price could be higher or lower than*

*** Bundled software developed by Smith Micro (MacCom Center, QuickLink II); Software Ventures (MicroPhone LT); STF (StartFaxing); PSI (Faxcilitate); CompuServe (MacCIM); Delrina (FaxLine). Hayes and*

## Are 28.8-Kbps Modems All the Same?

**= Best result in test.**
**Modems indexed in comparison to top performer in each category. Listed in decreasing order of overall performance. Longer bars are better.**




### BEHIND OUR TESTS

Macworld Lab, in conjunction with the PC World Test Center, used a Telecom Analysis Systems telecommunications-network simulator to evaluate modem performance. We ran all tests with pairs of identical modems attached to the network simulator. We also tried to test the Telebit TeleBlazer, but it was incompatible with our test equipment.

We tested for reliability over many line conditions, representing 95 percent of line conditions in the United States. The Zoom modem was less than 70 percent as effective at navigating impaired lines as the Motorola, the most effective.

We tested for throughput using five files of varied size and compressibility; the results provide a good overview of how well each modem implements V.42bis compression. The Hayes and GVC (Maxtech) tied for best, with the Logicode and Supra modems coming in last, however, they were only about 10 percent slower. (File types were a numbers-only vector graphics document, a WordPerfect text file, an executable file, output from a 64-bit random-number generator, and an archive containing several files of different types.)

**—Macworld Lab testing supervised by Matt Clark**

| Special Features; Bundled Software ** |
|---|
| QuickLink II |
| MacCom Center |
| AOL, MacCIM, MacCom Center, Prodigy |
| Auto-answer, auto-dial |
| Power Mac software enhancements; fax, voice, ARA recognition; AOL, GlobalFax, GlobalFaxOCR |
| Callback security, leased-line support; MicroPhone LT, StartFaxing |
| AOL, SmartCom, SmartCom Fax |
| Caller ID (optional); ARA script; FaxLine |
| On-screen help; call security; distinctive ring; remote configuration; AOL, MacCIM, MacCom Center |
| Simultaneous voice, data; MacCom Center, QuickLink II |
| Download to flash ROM; Caller ID; line sharing; Faxcilitate, MacCIM, MicroPhone LT |
| None |
| Volume-control knob; AOL, MacCom Center |
| Caller ID; AOL, MicroPhone LT, StartFaxing |

*cians. Macworld uses a point system, including bonuses and demer- company's estimated street price. NP = Not provided by company. Global Village modems include proprietary software.*

high end of the modems we tested, but the modem may be worth it if you need Hayes's special data-compression capability (which we did not test).

### The Last Word

You may think a 28.8-Kbps modem is the last one you'll have to buy. It ain't necessarily so. There are already voice/data/fax modems on the market. These are most handy if you have a small office and want your computer to act as an answering machine; that capability requires specialized voice-mail software such as High Tide's WaterMark Message Central or Prometheus's CyberPhone.

Soon, you may buy an ISDN card to interface between your computer and a digital telephone network. Motorola and Adak Communications are already offering ISDN controllers. Of course, you won't have any use for an ISDN card until your local telephone company offers ISDN service and you can justify the high installation costs (see this issue's *Networks* news for tips on connecting to ISDN).

Meanwhile, we have these 28.8 modems to choose from. They offer fast speed and a fast return on investment. We were impressed by the Motorola PowerClass 28.8's speed, but put off by its price. If it were significantly faster than the GVC XM288E and the U.S. Robotics Sportster, we might be dissuaded. But the latter two have excellent performance and some nice design touches (the volume-control knob for the Sportster and the recessed power switch for the XM288E), making them a better deal. **m**

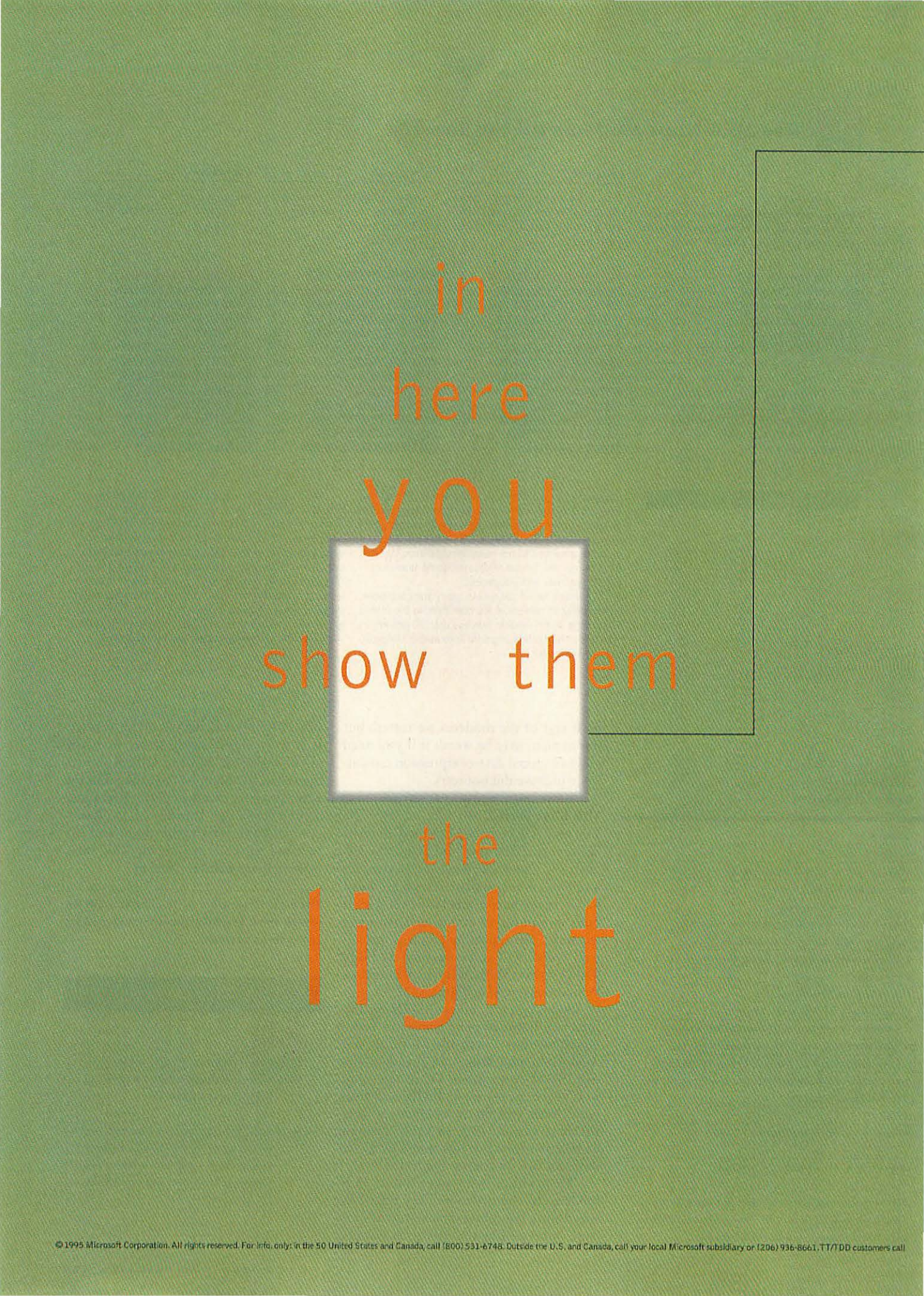
*Macworld* senior editor HOWARD BALDWIN has written about telephony issues for both desktop and large-system users.

### FAST MODEMS

MW EDITORS' CHOICE

Performance, price, and design—all of these factors are important when you're choosing a modem.

**No choice** Tech support is also important. And unfortunately none of the best modems' vendors came anywhere near decent tech support, so no modem merits the Editors' Choice award.




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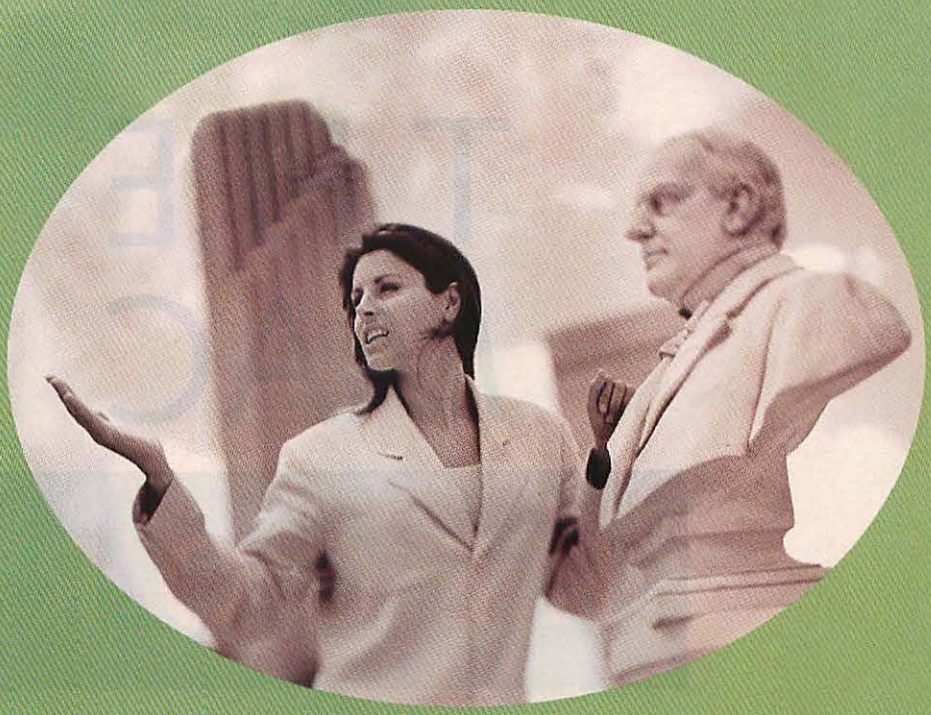
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Clip art.

Add

Sound.

Add

Video.

REHEARSE

To predict

Questions.

To practice

Your delivery.

To polish

Your timing.

MAKE CHANGES

To your presentation's

Content.

To your presentation's

Look.

To your presentation's

Flow.

MAKE CHANGES

To the way

People see.

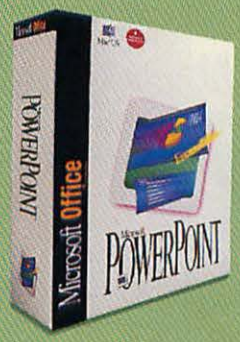
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# THE MAC RECORDING STUDIO

## THE BEST OPTIONS TO MAKE FULL USE OF THE MAC'S AUDIO ADVANTAGE

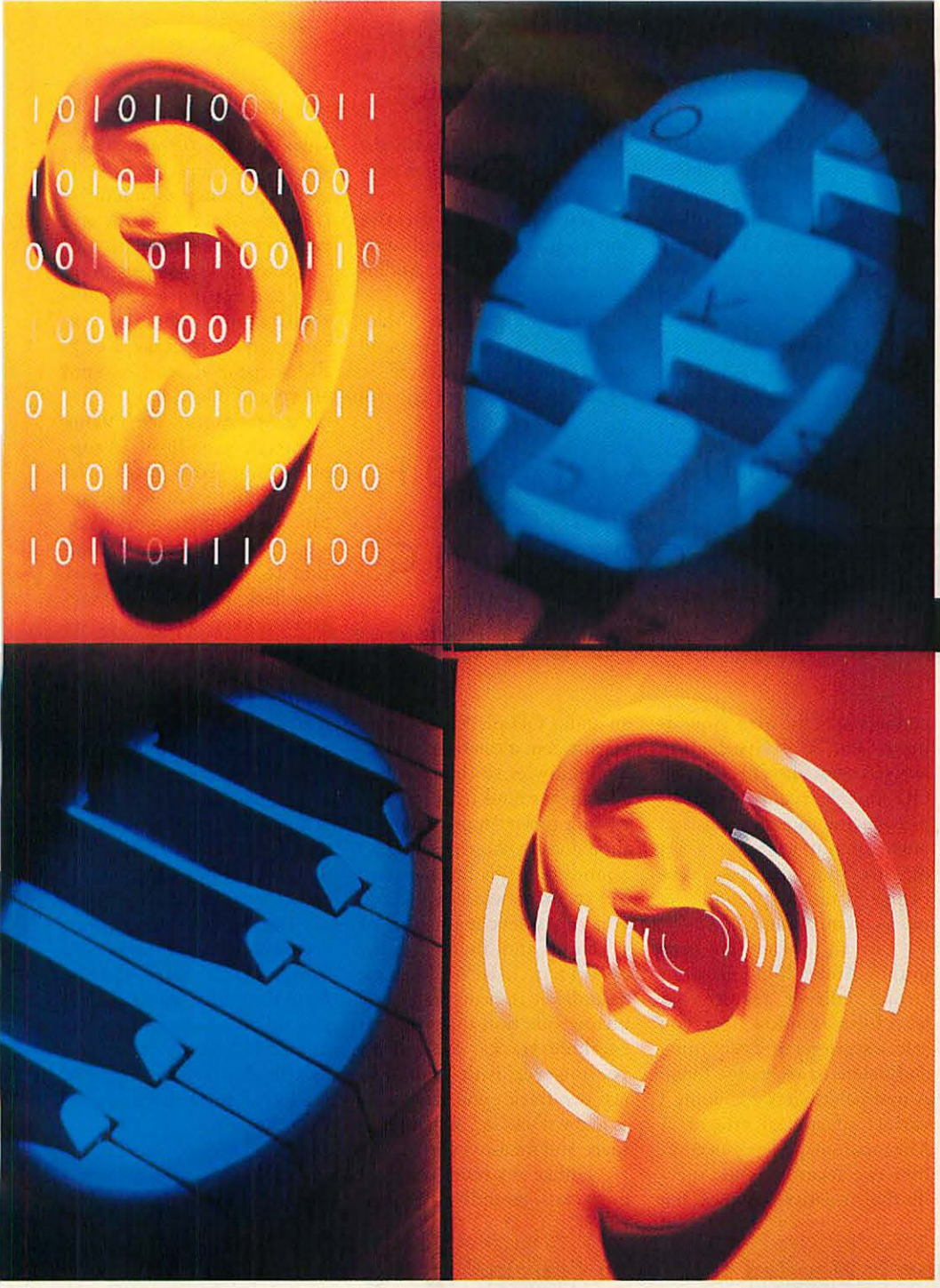
The Macintosh has had strong sound features ever since the first Mac introduced itself at Apple's 1984 shareholder meeting, and things have improved vastly since then. Thanks to the comprehensive audio features in the AV and Power Macs—and the efforts of some creative third-party developers—Macintosh audio has progressed from fun and games to professional-level production. Whether you're a budding musician creating a demo tape, a QuickTime movie producer, or a recording engineer wanting to add digital tools to an analog studio, there's a Mac-based audio product for you.

Every Power Mac and AV Mac can record and play back near–CD-quality audio with no additional plug-in digitizing cards. Spend a few hundred dollars on a recording program, and you have a multitrack digital recorder that would have dropped jaws a decade ago.

On the higher end, products that combine hardware and software can provide true CD-quality sound and can connect to digital audiotape (DAT) recorders and other professional audio equipment. Between $1295 and $10,000 buys a system you can use to record material for a master CD. (Add a recordable CD drive such as those compared in "Desktop CD-ROM Publishing," *Macworld*, March 1995, and you can even burn the master itself.)

Besides sounding great, digital sound products provide editing precision and mixing flexibility that analog recorders can't match. You can rearrange sections of a recording without altering the original sound files. You can mix tracks with no degradation of quality. You can restore old recordings by applying noise-reduction software and even by hand-drawing waveforms.

I grew up in my father's recording studio, and have worked with Mac audio products since the original MacRe-



BY JIM HEID

corder appeared in 1985, so I jumped at the opportunity to examine the latest offerings. For this roundup, I tested the full spectrum of Mac audio products, ranging in price from $149.95 to nearly $10,000. I also examined more than a dozen plug-in modules for refining recordings.

### System Requirements

Compared with video, digital audio has modest system requirements: 16MB of RAM, a 1GB or larger hard drive (high-quality stereo sound uses 10MB of disk space per minute), a backup device, and a 17-inch or bigger monitor to manage the large number of windows most programs use. You also need traditional audio gear—microphones, a mixer, and an amplification and speaker system.

Power and AV Macs have the processing power required to record and play audio at CD specifications: 44,100 samples per second (44.1kHz), with 16-bit resolution. Because these Macs' audio circuits aren't of the same quality found in dedicated audio gear, their sound falls just short of CD quality—though only audiophiles will be able to tell the difference.

Older Macintoshes, such as 68040-based, non-AV machines, can run some audio applications but are limited to 22kHz recording and playback—roughly motel clock-radio quality. If you have such a Mac, use Apple's Sound Manager 3.0 or later (available on online services and the Internet): version 3.0 is the first Sound Manager to support 16-bit recording; version 3.1 supports emerging audio-compression standards and delivers better performance on Power Macs.

Slower 680X0 Macs can also run many dedicated audio hardware products, whose built-in digital signal processor (DSP) chips handle the hard work. Even the high-end Digidesign Pro Tools III system runs on a Centris 650; the Digidesign Audiomedia II card works on a Mac IIci.

Most Mac audio cards are NuBus, although PCI developments are under way—for example, digital I/O (input/output) cards for the PCI Macs that would provide only digital I/O connectors and would use the Mac for analog-to-digital (A/D) and digital-to-analog (D/A) conversion. The benefit would be a cheap way to get digital I/O. Even in the absence of digital I/O, the second generation of Power Macs released in August 1995 remain ideal platforms for software-only audio products.

The Power Mac 7500 and 8500 are particularly well suited to audio; both have rear-panel phono jacks, the same connector type found on consumer stereo equipment. They aren't the best connectors for high-end audio, but they're quieter and more reliable than the Sony Walkman–style miniplugs that burden other Macs.

## THERE ARE THOUSANDS OF CRISP, GREEN REASONS FOR USING SOFTWARE-ONLY PRODUCTS

### Sound Software

Although there are reasons for investing in high-end audio hardware, there are also thousands of crisp, green reasons for using software-only products. Programs like Opcode Systems' DigiTrax and OSC's Deck II are a dream come true for anyone who wants to sound good on a budget.

**Fun Beginner's Program** Opcode's Audioshop 2.1 ($149.95, 415/856-3333) supports two-track (stereo) recording with an emphasis on audio CDs. Audioshop resembles a CD player and is a fine substitute for the audio CD-player utilities that come with most CD-ROM drives. But unlike those utilities, Audioshop lets you convert audio CD tracks into audio files. (Numerous QuickTime-savvy utilities, including the $30 MovieTrilogy shareware from Pink Elephant Technologies [paul_c.h._ho@magic.ca], can also do this.) Audioshop can record audio from a source connected to the Mac's sound-input jack. A playlist feature lets you create lists of clips and CD tracks: record yourself introducing various songs and you can put together a DJ playlist that alternates between your intros and the tracks on an audio CD.

For an inexpensive program, Audioshop provides strong editing features. A waveform window lets you select sections of a recording and delete or rearrange them. A tool palette lets you apply a variety of special effects. A Mixer command lets you combine two recordings and specify their relative volumes, but it's crude compared with the mixing features costlier programs provide.

If you want an inexpensive way to play with sound or to play your audio CDs, Audioshop is a great choice.

**Versatile Package** Macromedia's venerable sound package SoundEdit 16 ($379, 415/252-2000) can't control an audio CD player or create playlists, but it can open QuickTime movies so that you can edit their sound tracks as you view the movies' frames. (Audioshop doesn't show the movie.) SoundEdit 16 is built around a waveform window, where you can select a portion of a sound and delete, copy, or alter it. Like Audioshop, SoundEdit 16 provides a basic mixing function that lets you combine tracks. SoundEdit 16, however, isn't limited to just two tracks; you can create as many tracks as you have disk space and memory for.

Unlike any other program in its class, SoundEdit 16 provides *spectral displays*, which graphically depict a recording's frequency characteristics—useful for scientific and engineering applications.

SoundEdit 16 costs more than twice as much as Audioshop, but it's much more versatile, and it includes a CD-ROM packed with sound effects and music clips.

**Best Multitrack Value** Although SoundEdit 16 supports numerous tracks, its mixing and recording features can be cumbersome. You wouldn't want to use SoundEdit 16 to mimic a multitrack tape deck, which records several tracks in separate passes and then lets you mix them down to a stereo recording. In contrast, DigiTrax 1.2 ($199.95) was *designed* for multitrack recording. Created by Alaska Software and now marketed by Opcode Systems, DigiTrax is the least-expensive program to use the multitrack metaphor, variations of which are common in costlier packages.

DigiTrax can record, mix, and play up to six tracks on a Power Mac, Centris/Quadra 660AV, or Quadra 840AV. If you fill all six tracks, you can mix, or *bounce*, multiple tracks to a single track (or a pair of tracks for stereo), freeing up the others.

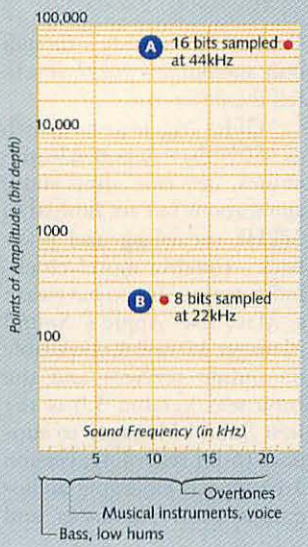
DigiTrax also provides automated mix-down features—if you move the mixer's sliders

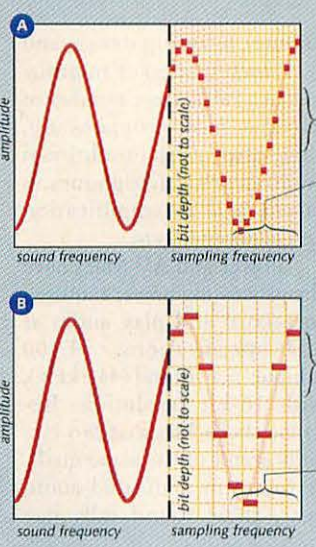
## How Much Resolution Is Needed to Create Convincing Digital Sound?

The important factors in producing a convincing digital facsimile of natural sound are sampling frequency (how often the change in amplitude is recorded) and bit depth (how many steps the amplitude can be divided into).

The sampling frequency must be at least twice the rate of the analog sound's frequency. (If sampling and sound frequencies were the same, you'd keep sampling the sound wave at the same point in its cycle, producing a straight line, or silence.) Sampling at 44kHz can capture sounds with frequencies up to 22kHz (considered the full range of human hearing).

Bit depth affects sound clarity. Greater bit depth allows more accurate mapping of the analog sound's amplitude.




**44kHz, 16-bit sound** closely represents the original analog sound's wave.

Changes in amplitude are gradual and approximate the wave fairly smoothly.

The high sampling frequency allows recording of short waves, or high pitches.

**22kHz, 8-bit sound**, in contrast, barely represents its analog counterpart.

Changes in amplitude are abrupt and coarse. This lack of detail can add distortion.

The low sampling frequency makes it difficult (if not impossible) to represent short wavelengths (high pitches).

or pan controls while in playback mode, the program records the movements and repeats them in subsequent playbacks. You can save multiple sets of automation settings and switch between them to create different mixes.

DigiTrax lets you open and enhance QuickTime movie sound tracks—adding background music, for example. DigiTrax can also control an audio CD, making it easy to record tracks from a CD for your personal use. And the program can synchronize to a MIDI sequencer or to the SMPTE time code widely used in TV and film. In all, there isn't a better value in a multitrack recording program.

**Top Software-Only Option** There is, however, a better multitrack recording program. At $399, Deck II from OSC (415/252-0460) costs more than DigiTrax, but it's a better program for serious audio work. For starters, Deck II supports more tracks—up to 12 on a Power Mac 8100 and up to 16 on an 8100/110. Better still, Deck II also supports Digidesign's family of audio hardware. If your need or desire for a certain level of audio quality outgrows the Mac's built-in sound circuitry—or if you don't have an AV or Power Mac—you can use Deck II to drive an Audiomedia II card or Sound Tools II system. (Deck II doesn't support Digidesign's top-of-the-line Pro Tools III system.) Deck II can't access the outstanding software plug-ins that have been developed for Digidesign systems, but version 2.5—which I tested in a prerelease form—supports Adobe Premiere audio plug-ins. Deck II 2.5 provides several exciting new features, including numerous real-time effects and support for more than 12 tracks. Deck II 2.5 will also run on the PCI Power Macs—version 2.2 does not.

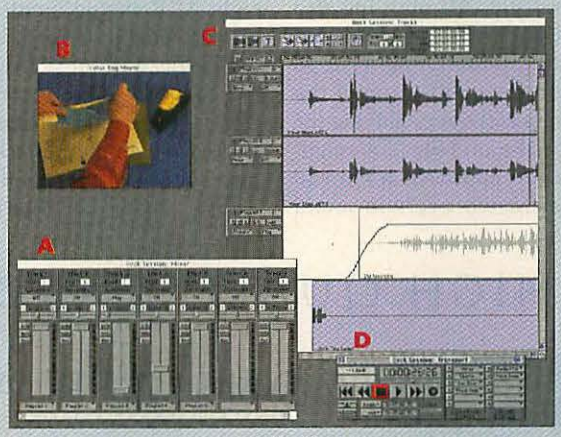
Deck II also surpasses DigiTrax with a superior array of nondestructive editing tools. You can create fades and cross-fades without altering the original audio files. You can bounce multiple tracks to a single track while retaining the originals—preserving the option of doing different types of bounces in the future. Unlike DigiTrax, Deck II provides a *scrub* feature, which lets you slowly play a recording forward and backward to find an exact point, such as the start of a sentence. Deck II's automation features are more complete and precise than DigiTrax's, and Deck II provides stronger support for MIDI, as well as time codes for film and video. Deck II is more complex than DigiTrax, but it's a much better choice for professional applications.

One downside: Deck II is copy-protected. You can install the program on up to two hard drives by authorizing your drives with the installation program. Deck II's protection scheme is not affected by disk-defragmenting programs—a good thing, since it's smart to defragment an often-used audio hard drive frequently, once a day for reliable results if you're constantly adding and removing files.

**Promise, Not Polish** Session Software, a $399 newcomer, is Digidesign's reply to Deck II. The program supports up to 16 tracks on a Power Mac; it also runs, albeit slowly, on a 680X0 Mac that's equipped with a Digidesign Audiomedia II card. Unlike Deck II, Session doesn't run on stock 680X0 AV Macs, nor does it support Digidesign's own higher-end hardware.

Session Software's user interface is more attractive and approachable than Deck II's, but the program falls short in several important areas. For example, it doesn't provide automatic punch-in and punch-out recording (even the lowly DigiTrax offers this), it lacks a scrubbing feature, it can't display live video in a window, and its session documents don't support sampling rates lower than 44kHz. The program was also less stable in my tests, crashing every now and then. Session Software has promise, but Deck II remains the best software-only choice.

## THE LOOK OF MULTITRACK RECORDING




All multitrack recording programs, including OSC's Deck II, shown here, provide similar interface elements.

**A** A Mixer window lets you adjust volume levels and left-to-right panning, and provides record-enable, mute, and solo tracks. Automated mix-down features record volume and panning adjustments and then replay the adjustments when you play the recording.

**B** A QuickTime movie window lets you view a movie while its sound track and other audio tracks play.

**C** A Tracks window provides a timeline-based view of the recording. You can select portions of tracks and delete or copy and paste them. The Tracks window also graphically depicts automation data—in Track 3, note the curve that indicates a gradual increase in volume.

**D** A Transport window provides on-screen versions of the traditional tape-deck buttons. With a program's looping and punch-in/punch-out features, you can switch into and out of record mode at specific times while other tracks play back—ideal for rerecording a flubbed portion of a song or narration.

### Hardware Options

If you have higher quality standards and a bigger budget, you'll want to look beyond software-only products toward professionally oriented hardware-software bundles. Third-party digital-audio hardware provides higher-quality D/A and A/D converters than a Mac's. Generally, the more you spend, the better the quality of these vital links in the audio chain. Dedicated audio hardware also provides the kind of connectors used in professional audio gear.

- High-end products—such as Digidesign's Pro Tools III—can accept sophisticated interface boxes containing *XLR connectors*, the preferred method of interconnecting professional microphones, mixers, and sound-processing hardware (see the photo "Audio Interfaces").
- *Digital I/O connectors* let you attach DAT recorders and other digital-audio gear to the audio hardware. Digital I/O lets professional recordists record to or from DAT while keeping the audio signal in the digital domain (using analog connectors forces the audio through additional D/A and A/D conversion cycles that can compromise quality). How critical is digital I/O? If you're producing audio for a CD-ROM or even for AM radio, it isn't. Musicians on tight budgets may also find relying on analog connectors an acceptable trade-off—you can still get a great recording if you know what you're doing. For big-budget projects, though, nothing less than digital I/O will do.

Digital I/O connectors come in two flavors. *S/PDIF*

(Sony/Philips Digital Interface Format) connectors are standard RCA phono jacks. Low-end DAT recorders and less-expensive cards such as the Audiomedia II use this interface standard. *AES/EBU* (Audio Engineering Society/European Broadcast Union) is a three-conductor XLR jack—the same type of connector used in professional microphones and mixers. Professional DAT recorders and high-end audio hardware such as Digidesign's 888 interface for Pro Tools III use this type of interface. Most high-end Mac audio hardware provides both AES/EBU and S/PDIF.

**Loudest Bang for the Buck** If you're on a tight budget but need digital I/O and higher-quality recording circuitry than a Mac provides, an excellent choice is the $1295 Audiomedia II card from Digidesign (415/688-0600). This NuBus card includes Digidesign's Sound Designer II version 2.8, a powerful recording and editing program. (If you use Digidesign's Pro Tools or OSC's Deck II together with Digidesign hardware, you can buy Sound Designer II for $495.)

Sound Designer II lets you cut, copy, paste, and clear portions of a recording. But unlike any other program I reviewed, Sound Designer II also provides a pencil tool that lets you draw waveforms, thus changing the recorded sound. One use for this feature is restoring old recordings that contain dropouts caused by decayed tape splices—a skilled operator can draw what was supposed to be there.

Sound Designer II supports plug-in modules. You can preview several seconds of a sound as you tweak a plug-in's settings; a Process button lets you modify the original sound file. All plug-ins also have a Playback button that causes Sound Designer II to route the audio through the plug-in without modifying the original sound file. You might take this approach when you have created a certain sound with a plug-in and you want to record a DAT master while retaining the option to apply different settings later.

With just one DSP chip, the Audiomedia II card can't run more than one plug-in at a time. If you want to apply multiple plug-ins (a common scenario), you must process the sound file one plug-in at a time. This alters the original file, so you can't start over again from square one.

Digidesign also sells the $995 Audiomedia LC, a version of the Audiomedia card that runs on the discontinued Mac LC, LC II, and Performa 400 series, many of which live on in school music labs.

## IF YOU NEED HIGH QUALITY AND HAVE A BIGGER BUDGET, CONSIDER A HARDWARE-SOFTWARE BUNDLE

**More Chips for More Tracks** Digidesign's $6995 Pro Tools III Core System includes two NuBus cards: the DSP Farm, with four DSP chips; and the Disk I/O card, a SCSI controller to which you connect a dedicated hard drive. You also need an audio interface. The 888 I/O Audio Interface ($2995) provides eight XLR analog inputs and outputs and four AES/EBU digital ins and outs. I tested the 882 I/O Audio Interface ($995), which provides eight stereo ¼-inch phone-jack inputs and outputs and an S/PDIF digital I/O interface.

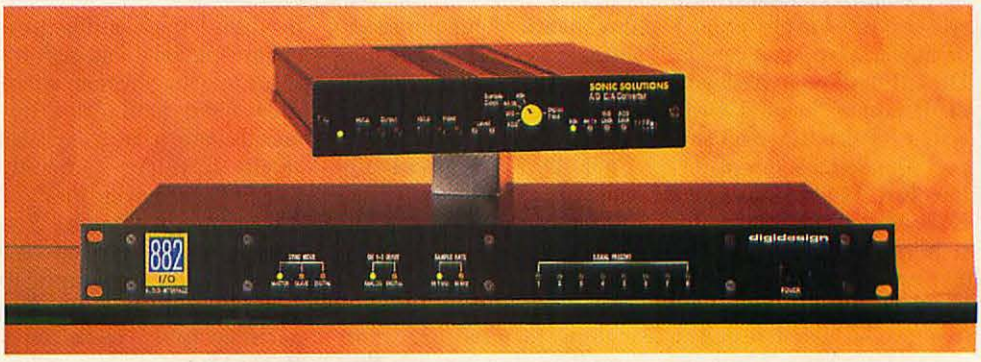
The Pro Tools III Core System supports up to 16 audio tracks (Audiomedia II supports 4). You can expand the system in 16-track increments (up to a total of 48 audio tracks) with the $4995 Pro Tools III Expansion Kit, which includes one Disk I/O card and one DSP Farm card.

Pro Tools III uses Digidesign's TDM (time-division multiplexing) technology, which lets you use multiple plug-ins simultaneously without altering the original sound files. Pro Tools III's Mixing Board window lets you route each track's audio through one or more plug-ins—much as an engineer would use a mixing console to insert effects boxes into the audio path. A plug-in generally monopolizes one of the DSP Farm's DSP chips; if you want to use more than a couple of plug-ins simultaneously, you can add additional DSP Farm cards (up to a total of 10—with a $1995 Digidesign Expansion Chassis—or the number of NuBus slots in the Mac) for $2495 each.

**Middle Ground** Between the Audiomedia II and Pro Tools III systems, functionally and price-wise, is Digidesign's Session 8 ($1995, not including a required 882 or 888 I/O interface). Session 8 supports up to eight tracks. A step up from there is Digidesign's Sound Tools II system ($4995), which includes the Sound Designer II software and an audio I/O interface containing four XLR analog inputs as well as S/PDIF and AES/EBU outputs.

**A Sound Alternative** It may seem like Digidesign has a monopoly on high-end Mac audio, but Sonic Solutions (415/893-8000) offers several products. I tested the $4995 PowerStation 4/12, which uses the Sonic Solutions Processor (SSP), a NuBus DSP card that provides 4 channels of digital or analog I/O and up to 12 channels of audio playback from a single dedicated hard drive. A two-track version, the PowerStation 2/8, costs $2995 and provides 8 tracks of playback.

Sonic's high-end offerings include the Ultra-Sonic Processor (USP) system, which provides up to 16 tracks of I/O, 32 filter sections, and up




PAUL FRANZ MOORE

**Audio Interfaces** High-end audio hardware—such as Sonic Solutions' Sonic A/D-D/A Converter (top) and Digidesign's 882 I/O Audio Interface—include interface boxes that connect to external analog and digital audio gear, as well as NuBus-based DSP cards.

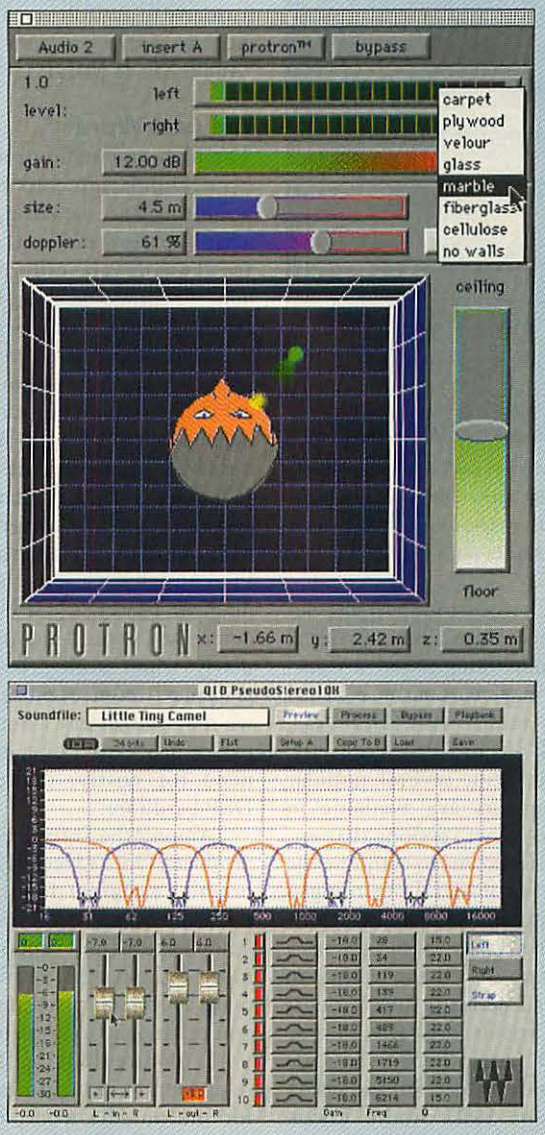
# PLUG INTO SOUND

IN the imaging and publishing worlds, part of the appeal of Adobe Photoshop and QuarkXPress is the array of powerful software add-ons they accept. In the audio world, Digidesign's audio products have been made even more appealing by numerous third-party plug-ins.

Not all Digidesign-compatible plug-ins work with all Digidesign products. Some require Digidesign's time-division multiplexing (TDM) technology and thus work only with systems such as Pro Tools III. Others work with TDM systems as well as on Audiomedia II cards under Sound Designer II software.

Plug-ins tend to mimic the classes of audio processing hardware.

- *EQ*, or equalization, plug-ins boost or attenuate certain frequencies to improve sound quality—think of them as ultraprecise treble and bass controls.
- *Dynamics* plug-ins include *compressors*, which are high-speed, automatic volume controls: they boost the volume during quiet parts and lower it during loud parts, keeping the level of a voice or instrument more constant.
- *Limiters* perform similarly to compressors, except they only reduce loud peaks that cause distortion.
- *Soundstage-manipulation* plug-ins alter the left-right mix of a stereo recording, often in ways that are impossible to accomplish with a simple balance or pan control.




**Move Sound, Make Waves** Protron (top) lets you position a sound within 3-D space by dragging it around an on-screen head. You can specify the size of the space and, as the pop-up menu shows, its surface characteristics. Q10-ParaGraphic EQ (bottom), a Digidesign-compatible plug-in, in its PseudoStereo mode simulates a stereo sound from a monophonic recording by panning different frequency ranges to the left and right sides of the stereo field.

The best, most sonically useful collection of Digidesign plug-ins I tested comes from Waves (615/588-9307). Its collection includes C1-Compressor/Gate (TDM version $850, Sound Designer II version $700); Q10-ParaGraphic EQ (TDM version $600, Sound Designer II version $450); L1-Ultramaximizer, a peak limiter (TDM $800, Sound Designer II $650); and S1-Stereo Imager (TDM $650, Sound Designer II $500), a soundstage-manipulation plug-in. Waves sells the plug-ins separately (with an authorization copy-protection scheme) or as a bundle for $2500 (with a hardware key that plugs into the Mac's ADB port—I encountered compatibility problems between this key and that of Adobe's After Effects video-editing program). All the other plug-ins I tested use an authorization scheme.

Steinberg North America (818/993-4091), maker of the Cubase Audio sequencing and recording program, offers two sets of plug-ins for TDM systems. Virtual FX Rack ($399) is a bundle of five plug-ins: Pandora, a great stereo panning utility; PlateRunner, for adding reverberation effects; Stereo Wizard, a soundstage-manipulation plug-in; Hallelujah, for adding chorus effects; and Y-Cables, for patching multiple tracks into a single source. They're a good value but have some weak spots. For example, PlateRunner, unlike superior reverb plug-ins such as Digidesign's D-Verb ($495), doesn't have presets for common room settings and characteristics. Steinberg's other plug-in, DeClicker ($999), removes pops and clicks from recordings—for example, an audio engineer could use it to restore an old recording.

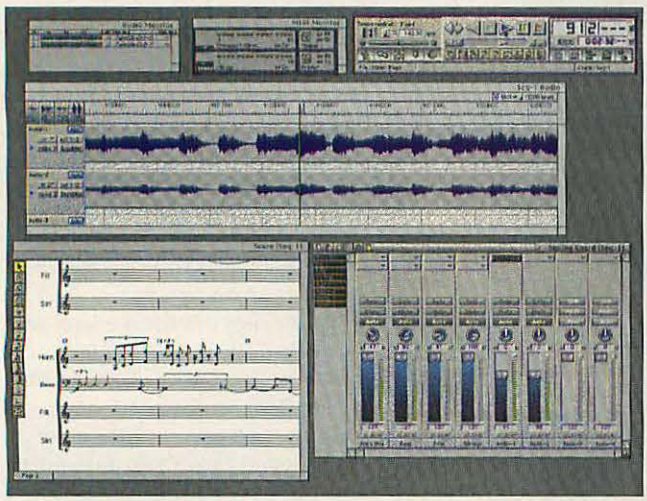
Digidesign's Digidesign Intelligent Noise Reduction (DINR; $995) is a superb noise-reduction plug-in for both Sound Designer II and TDM systems. DINR does a breathtaking job of reducing broadband noise such as tape hiss, and pitched noise such as AC hum. It excelled at cleaning up a recording made on a consumer-grade stereo cassette deck—a fertile medium for high-frequency tape hiss. DINR also outperformed Steinberg's DeClicker at removing scratchiness from an ancient 78-rpm acetate recording.

Crystal River Engineering's Protron ($995) is based on technology the company developed for virtual reality systems. With Protron, you can position a sound in 3-D space, placing it to the left or right of a listener or even above or behind the listener. You can simulate various wall surfaces and room sizes, and apply the Doppler effect—the phenomenon that causes a train whistle's pitch to change as the train passes you. You can position a sound at a fixed location or cause it to move from one place to another. I almost gave myself motion sickness playing with a helicopter sound effect while wearing headphones. No question: Protron is an awesome tool for film and game sound-effect designers.

Other sources for Digidesign-format plug-ins are Jupiter Systems (408/768-8060), Lexicon (617/736-0300), QSound Labs (403/291-2492), Apogee Electronics (310/915-1000), and Arboretum Systems (415/931-7720).

Arboretum Systems also offers the $595 HyperPrism 1.5.5, a novel effects and sound-design program. (It's also available as a TDM-format plug-in for $795.) With HyperPrism, you can apply any of numerous common effects—chorus, tremolo, flange, filtering, and more—and alter their characteristics in real time by editing their waveforms with the mouse.

Adobe Premiere–format plug-ins include Waves' Q2-ParaGraphic EQ ($99, for Adobe Premiere only) and InVision Interactive's CyberSound FX ($129, 415/812-7380). Q2-ParaGraphic EQ is a scaled-down version of the company's outstanding Q10-ParaGraphic EQ parametric equalizer. (Waves plans to release additional Premiere-format plug-ins.) CyberSound FX comprises 15 plug-ins: reverb, filter, chorus, flange, delay, EQ, and more. Neither package requires DSP hardware or even a Power Mac—each runs on any Mac that supports Premiere. Premiere isn't an ideal audio-production program, but you can also use these plug-ins with OSC's Deck II 2.5.



**Audio Meets MIDI** The Mixing Board window in Digital Performer (lower right) provides volume sliders for MIDI and audio tracks. The pop-up menus at the top of each track's controls let you apply MIDI or audio plug-ins to each track. The Score window (lower left) shows a transcription of MIDI tracks.

to 32 tracks of audio playback from a single dedicated hard drive. Prices start at $7995 for an 8-track configuration. As with Digidesign's Pro Tools III, you can add USP boards to add more tracks—in the USP's case, up to 96. Sonic says PCI versions of its cards will ship by 1996.

The Sonic products are powerful and have an excellent reputation for sound quality. They're particularly well suited to the high-end worlds of CD premastering, radio production, and postproduction for film and TV. However, I found the Pro Tools III system easier to set up and use, perhaps due in part to its superior documentation. Also, keep in mind that none of the terrific plug-ins I tested work with the Sonic products.

## The MIDI Approach

Another category of software straddles the fence between digital audio and the Musical Instrument Digital Interface (MIDI), a standard for connecting synthesizers to each other and to computers. MIDI *sequencer* programs are virtual tape decks that record and play back MIDI data transmitted by musical keyboards—data that describes what keys are pressed, how hard, and for how long. MIDI data is much more compact than digital audio, and it's easy to edit.

Conventional MIDI sequencers can't record digital audio, although there are several ways to combine MIDI and audio with DigiTrax, Deck II, and Pro Tools III. Better still, several popular sequencers are available in audio-savvy versions that enable musicians to combine the benefits of MIDI recording—low storage requirements, easy editing, and versatile playback options—with the ability to record acoustic instruments and vocals digitally. These MIDI/audio hybrids include Opcode's $595 Studio Vision AV and $995 Studio Vision Pro, Mark of the Unicorn's Digital Performer ($895, 617/576-2760), Emagic's Logic Audio ($799, 916/477-1051), and Steinberg North America's Cubase Audio ($799, 818/993-4091).

Unfortunately, Opcode, Emagic, and Steinberg were all revising their MIDI/audio applications extensively when I wrote this article, making the software unavailable for testing. All these programs except for Digital Performer can record audio on any AV or Power Mac, and they support Digidesign hardware (which Digital Performer requires). Based on my experience with previous versions, I'll confess an addiction to Studio Vision's potent feature set—which is even stronger in the forthcoming version 3.0—but a preference for Digital Performer's beautiful user interface (see the screen shot "Audio Meets MIDI").

## The Last Word

The high-end audio products from Digidesign and Sonic Solutions are dazzling, but what impresses me even more are the software-only products. Programs such as Deck II, DigiTrax, and Session Software show what results when creative programmers get their hands on outstanding hardware. (And yes, Apple deserves some credit—the Windows world has plenty of audio-recording programs, but none of them run on a *stock* PC.) And this is just the beginning. As PowerPC CPUs become even faster—and particularly when multiprocessor systems become common—we may see an era when fast native processors obviate the need for costly, dedicated DSP hardware.

Among the software-only products, OSC's Deck II is the premier program for multitrack recording. Professional-grade features and support for most Digidesign hardware make Deck II a program that you're unlikely to outgrow.

If you're looking for a basic sound-editing package—for multimedia work, occasional QuickTime soundtrack editing, or tinkering—get Macromedia's SoundEdit 16. Opcode's Audioshop is a less-expensive alternative, but I wouldn't want to use it for day-in, day-out production.

As for the hardware products, Digidesign takes the winner's circle. Its Audiomedia II card is the least expensive route to digital I/O and DSP plug-ins, and the bundled Sound Designer II software is the best waveform-editing package around.

At the high end, the choice between Digidesign's Pro Tools III and Sonic Solutions' Power Station isn't easy. I've heard many professionals praise the sound quality of the Sonic Solutions hardware, but I've also talked with golden-eared engineers who feel that neither products' A/D and D/A circuitry compares with that of a high-end DAT recorder. In this stratum, personal biases can override technical specifications. One thing is certain: Pro Tools III users can choose from a superb array of third-party plug-ins. Because of this and Digidesign's superior documentation and software design, I give the edge to Pro Tools III. **m**

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JIM HEID produced the CD-ROM that comes with his book *Macworld New Complete Mac Handbook*, fourth edition (IDG Books Worldwide, 1995).

### AUDIO PRODUCTS

MW EDITORS' CHOICE An outstanding audio product must do much more than just record and play back sound. Equally important criteria include ease of use, professional-level features, a good track record for upgrades, and for hardware products, broad third-party support.

**Software-Only Product**

**Deck II** This program can handle professional-level multitrack recording and video sound-track postproduction; it also supports Digidesign hardware. **Company:** OSC. **List price:** $399.

**Low-End Hardware-Software Product**

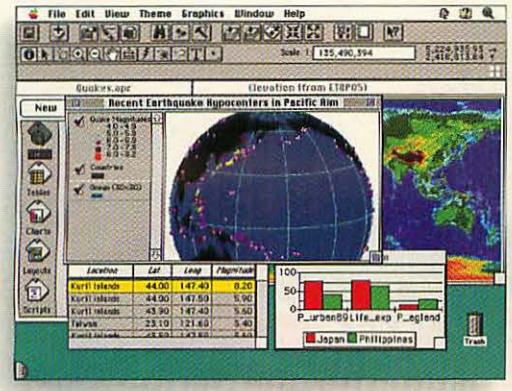
**Audiomedia II** This NuBus card provides digital I/O and a gateway to the universe of Digidesign-compatible plug-in and it includes the first-rate Sound Designer II software. **Company:** Digidesign. **List price:** $1295.

**High-End Hardware-Software Product**

**Pro Tools III Core System** With the ability to insert plug-ins as though they were external effects boxes, Pro Tools III takes the concept of nondestructive editing to its limits. **Company:** Digidesign. **List price:** $6995 (excluding required interface).

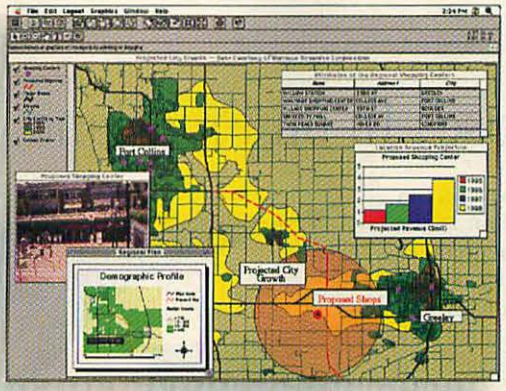
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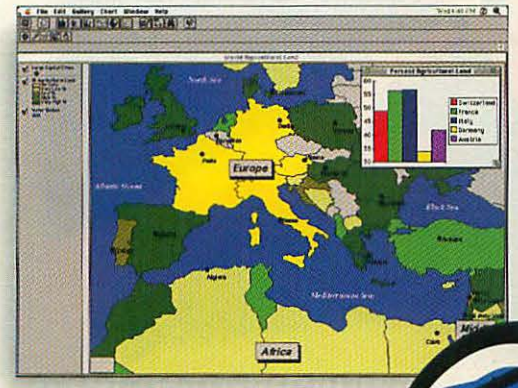

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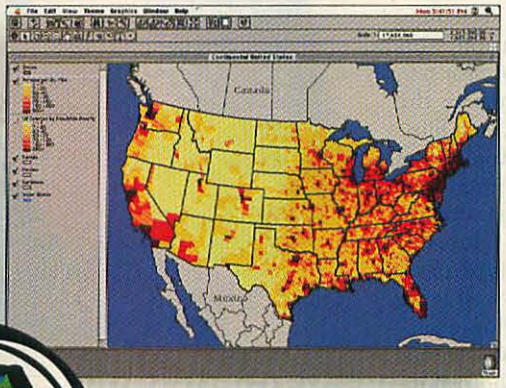

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EDITED BY CATHY ABES

# Graphics

THE LATEST IN DESIGN, PUBLISHING, AND PREPRESS

## Illustrator Closes In on FreeHand

CLOSE ON THE HEELS OF MACROMEDIA FreeHand 5.5's introduction at the Seybold Conference in late September (see *Graphics* news, November 1995), Adobe (415/961-4400) is readying the next version of Illustrator. As usual, the Mac's two leading draw packages are brandishing their latest feature arsenals, but some veteran users are more interested in simplified interfaces that will significantly reduce production time.

Still, there's no denying that many of version 6.0's changes will be welcome, especially its tighter integration with Photoshop. For example, Illustrator 6.0, like FreeHand 5.5, will recognize the same file formats as Photoshop. And Illustrator 6.0 includes a new API (Application Programming Interface) whose extensible architecture Adobe plans to standardize across its product lines. For the future this means that new Adobe and third-party plug-ins will work within 6.0 as well as the next major releases of Photoshop, PageMaker, and Premiere. For now it means you'll be able to apply any Photoshop-native filter—from version 2.0 through 3.04—to an Illustrator 6.0 image once you've rasterized it with the new Rasterize command. Some filters, such as Invert, will work on both rasterized and vector images in Illustrator (although Invert won't work on gradients, custom colors, or patterns). Illustrator product manager Sean McKenna expects the next major upgrade after 6.0 to let you run Photoshop distort filters without first rasterizing your drawing.

Other examples of tighter integration include drag-and-drop between Illustrator and Photoshop, support for PostScript on the Clipboard, a new Illustrator eyedropper tool that can sample artwork from anywhere (within Photoshop, in placed images, and even from the Finder), and Illustrator's ability to read and write Acrobat PDF files.




JOHN BLECK

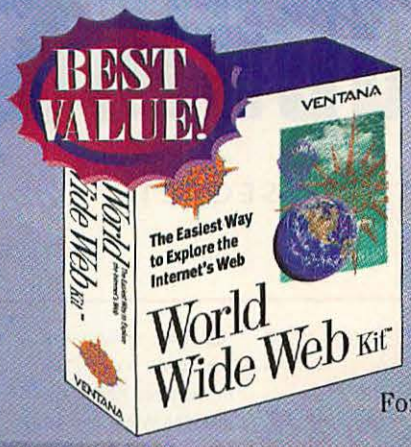
Following FreeHand's lead, Adobe has transformed a number of Illustrator filters into tools, including the star, spiral, rectangle, polygon, lasso, and knife, providing more control and flexibility. The knife lets you cut objects along a drawn path, and its curve-fitting capability refines scribbled lines to a smooth path. When you use the lasso, Illustrator copies whatever falls within the selected area and places it over the original.

The Path Patterns command lets you choose patterns (and corners) and apply them along a path, to create, for example, a border or a frame. A library of patterns and corners will ship with the program, but you can also design your own.

Interface changes include three new palettes: Tools, Align (which combines features of the Align and Distribute filters), and Control (which is similar to PageMaker's and FreeHand's Transformations palette, where you enter numbers to change the dimensions of selected objects, position objects on the artboard, and rotate and scale objects). Because filters can now float as palettes, third-party developers can build filters that appear to be part of the program. And plug-ins in Illustrator are no longer restricted to the Plug-in menu—they can be put in any menu or even in a floating palette to minimize trips to the menu bar.

You'll now be able to create, preview, and print color separations (including TIFFs) from within Illustrator, as well as open and convert PostScript Level 1 EPS

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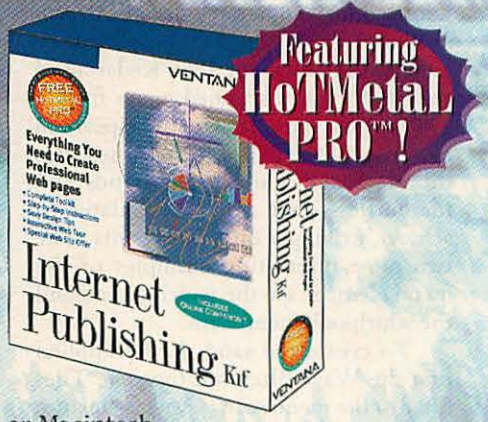
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# Expert Graphics

## GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

**Artist:** Ruth Kedar divides her professional time between teaching design at Stanford University and running her studio in Palo Alto, California. Her mixed-media and digital art can be seen in Art on the Net (**http://www.art.net/**).

**How It Was Done:** Kedar, like many digital artists, tends to recycle parts of her imagery. *Desert Winds 5* is part of a fine-art series that feature these bottles, whose shapes were generated in Adobe Dimensions and surface designs drawn in Illustrator.

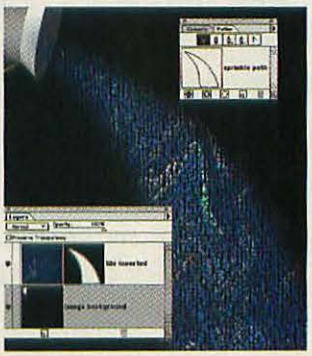
Another element that Kedar used repeatedly was a scanned menu from a 1940s cruise ship. It actually appears in five areas of the image—everywhere but the black and white backgrounds and the bottles—each time manipulated to achieve strikingly different results. The two most interesting examples of the menu element are the pouring sand and the whirlpool underneath.

To create the sand, Kedar applied first the Wave filter and then the Tiles filter to the menu scan (saved as "texture tiled"). In the main image, she drew a path for the sand ("sprinkle path"). After saving "texture tiled" to a new layer, and inverting it to blue ("tile inverted"), she made the path into a selection and added a layer mask. Pasting "texture tiled" into a third layer, Kedar added a layer mask with a diagonal blend. After making another selection from the path and masking out the background, she used Dissolve mode and lower opacity to simulate sparkling sand.

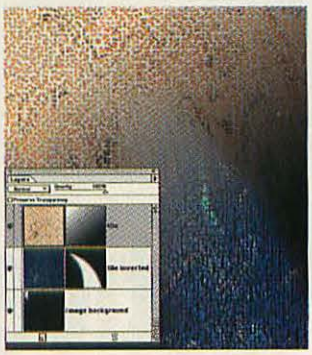
For the whirlpool, Kedar reused the "texture tiled" file. After applying the Wave filter and then the Twirl filter, she changed the position, size, proportions, and color of the image. She drew an oval path with the pen tool, then selected it with a 20-pixel feather radius and removed everything outside the oval. She pasted the pool over the pouring sand at 100 percent opacity in Lighten mode, which allowed only the lighter pixels in "sprinkle path" to show through the pool. ■



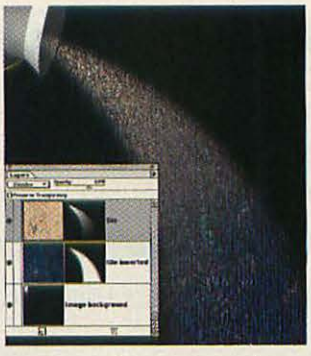
❶ The original scan of the menu (left). The menu after Kedar applied the Wave filter set to a randomized triangle wave with ten generators and default settings for all other variables (middle). The menu after she applied the Tiles filter set to 99 tiles, with a maximum offset of 60 percent, and the empty area filled with background color (saved as "texture tiled").



❷ After pasting "texture tiled" into a new layer, Kedar inverted it to change its color to blue and named it "tile inverted." With "sprinkle path" made into a selection with an anti-aliased 20-pixel feather radius, Kedar added a layer mask, then selected Inverse and pressed option-delete to fill the selection with the foreground color (black).



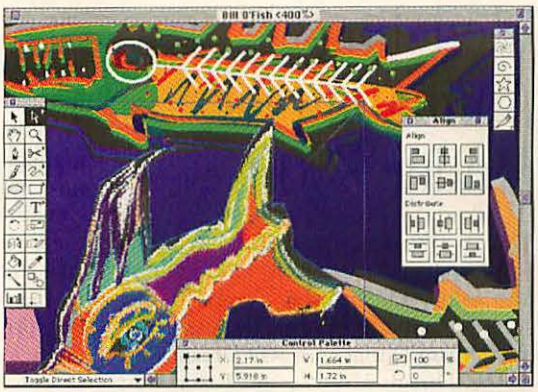
❸ Kedar created a third layer, where she pasted "texture tiled" again. She also added a layer mask, which she filled with a diagonal blend gradating from white at the top left to black at the bottom right.



❹ After making another selection from the path (with an 8-pixel feather), she selected Inverse and filled the selection with black to mask out everything but the sprinkle path. Dissolve mode and 69% opacity, combined with the gradated layer mask, simulated a sparkling sand effect at the top that gradually faded out at the bottom.

files from other applications (including FreeHand) into Illustrator artwork. Although Illustrator 6 will let you colorize 1-bit TIFFs, it still cannot handle gray-scale TIFFs, an ability FreeHand has had for some time.

Expected to by December for $595, Illustrator 6.0 will include Dimensions 2.0; 300 Type 1 fonts; clip art, photos, and patterns; and Photoshop-compatible filters. A CD-only upgrade from any version of Illustrator will be $99; $129 for CD-ROM and disks. FreeHand users can upgrade for $149.—C.A.



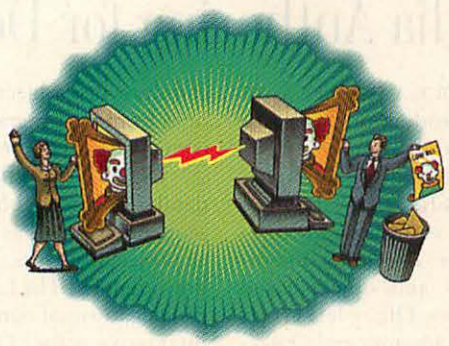
You can rasterize objects within Illustrator 6.0 and apply Photoshop filters to them. The fish in the lower-left corner of this image was rasterized and treated with Adobe Gallery Effects' Rough Pastels filter.

# Moving Images without Tears

FROM SYQUEST CARTRIDGES THAT won't mount on the desktop to modem transmissions that mysteriously fail, getting large graphics files from your Mac to a service bureau or other destination—under deadline—can try even the steeliest nerves. But several new products now available or on the horizon promise to ease those file-transfer and image-management headaches.

**Service-Bureau Networking** Virtual Network from Adobe Systems' Prepress Division (206/628-2749) is designed to make sending files to the service bureau as uncomplicated as selecting an output device in the Chooser.

Virtual Network, scheduled to be available by year's end, is a client-server program for transferring and receiving files over ISDN lines, switched-56 digital services, WAN (wide area network) routers, and high-speed modems and analog phone lines. The software is integrated with Color Central 2.5, Adobe's Open Prepress Interface (OPI) print- and image-server software, which automatically replaces low-resolution graphics files with their high-resolution counterparts just before output.



Using Virtual Network's Client module, you select the Chooser icon that represents your service bureau's Color Central print queue. Virtual Network automatically compresses your files for the most efficient throughput, dials in to your service bureau's host server, transmits the files (containing low-resolution scans) to the bureau's Color Central production workflow, and disconnects after transferring the files. Once at the service bureau, your files can be output to film with the high-resolution images in place.

You can download the generic Virtual Network Client software free from Adobe's World Wide Web site (**http://www.adobe.com**) or get your service bureau's customized version. Virtual Network is $1695 for up to ten client sites and $2995 for unlimited sites.

**Simpler Image Transfer** 4-Sight (515/221-2100) is introducing a suite of integrated software utilities that promise streamlined image transfer and management. ISDN Manager, due the end of October, lets you automatically transmit large graphics files over ISDN lines by selecting your service bureau's output device in the Chooser. ISDN Manager will include PPP Internet access through a service provider.

At the receiving end, the service bureau's 4-Sight OPi software (which is shipping in late September) is linked to Cumulus Software's Canto Network Image Database program. 4-Sight OPi automatically searches a Canto database for the high-res files linked to your transmitted documents, swaps them for the appropriate low-res images, and prints the job. ISDN Manager begins at $2795, depending on the number of site licenses; 4-Sight OPi is $3995 for unlimited users; the Cumulus Network Image Database starts at $1795 for five clients.

CreativePartner, now shipping from Emotion (415/812-9000), is a graphics file-transfer and annotation program that lets you quickly transmit large graphics files (QuickTime video, photos, and the

*continues*

## IN BRIEF

■ **3-D Type Tools** Two new plug-ins for creating 3-D type are due in late September. TypeCaster ($199) from Xaos Tools (415/487-7000) supports PostScript Type 1 fonts and lets you scale, rotate, and manipulate 3-D type within any application that supports Photoshop-compatible plug-ins. You can add bevels, textures, bump maps, and multiple lights. Advanced controls include blend, diffuse, and specular. 3D XT ($99) from Strata (801/628-5218; **D2022@applelink.apple.com**) lets you render 3-D type and vector graphics within QuarkXPress. You can bend and stretch character shapes, rotate objects, specify colors and surface textures, and add perspective by setting vanishing points and focal lengths. Other features include alpha channel support, antialiasing, light sources, and gels.

■ **Plug-In Filters** Cytopia Software (415/364-4594; **custserv@cytopia.com**) has released CSI PhotoLab ($99.95) for Photoshop and CSI Socket Set Volumes One and Two for Illustrator ($89.95 each, $159 for both). The PhotoLab filters include CSI Levels, which adjusts contrast in specific parts of the tonal range; CSI GradTone, which replaces selected luminance values with color hues; CSI PhotoFilter, which simulates photographic gels and optical filters; and CSI Negative, which converts a scanned negative to a positive and controls highlight, shadow, and exposure. Socket Set Volume One allows users to interactively view, select, and adjust fills, strokes, and stroke weights. Volume Two lets you interactively scale objects, create mirror images, step and repeat multiple objects, convert pattern fills to editable paths, and align objects and edges.

PETER HOEY

like) across WANs and LANs, as well as analog, ISDN, and T1 lines. According to the company, CreativePartner (which starts at $495 for a two-user system) can send a 45MB file across an Ethernet LAN in two minutes.

CreativePartner's error-recovery feature tracks file transfers; when a transmission fails, the program resends the file from the point where the connection dropped, rather than starting all over again. In addition, you can annotate multimedia and graphics files and send them to colleagues for comment, without altering the original file.

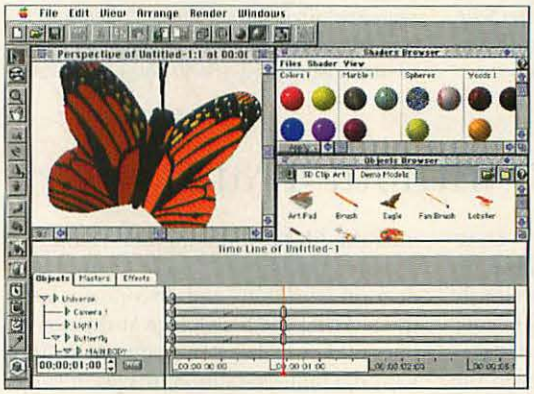
**Private Image Networks** Beginning this fall, Eastman Kodak (716/724-4000), working with Sprint, will develop and maintain private image networks for companies. Your digital images are stored in an image database that resides off-site on a Sprint server. With Sprint's image-retrieval software, you can search for the graphic you need, then download the file via Sprint's fiber-optic networks in any of five resolutions. For instance, you could work with low-resolution files, giving your service bureau access to your company's image network so that the bureau could download the high-resolution files for output. Pricing and other details weren't final at press time.

**Workflow Management** Alaras Tropix 2.0, which Alaras Corporation (919/544-1228; **alaras@aol.com**) plans to ship in early October, is a set of integrated software modules for image management and workflow automation. Chief among the modules is the Alaras Tropix Server ($4990), a server-based image-management database designed to be highly customizable. You can create any number of custom data fields for searching purposes and determine how to display the information. Other modules include Tropix Server Pro ($14,990), which adds server-to-server, remote, and other connectivity tools for accessing Tropix servers; and Tropix Time Billing ($4990, available in early 1996), for tracking remote access, image downloads, and other network activities.

Third-party plug-ins will let you further customize how you work, the company says, although at press time, only one plug-in—for previewing and altering an image's angle—had been announced. However, Alaras expects many more to appear after the release of Alaras Tropix Lite, a $49 shareware version it plans to post on America Online, CompuServe, and possibly the World Wide Web by the end of 1995. Lite will provide third parties the specifications to write a variety of plug-ins, most of which are expected to integrate Tropix with major graphics and publishing programs.—JAMES A. MARTIN

# Modeling/ Animation for Under $500

RAY DREAM (415/960-0768; **ray.dream@applelink.apple.com**) is branching into animation with Ray Dream Studio, a four-component suite consisting of Ray Dream Designer 4, Ray Dream Animator, Dream Models, and Extensions Portfolio. Studio combines high-end 3-D illustration and animation features in one low-cost package.




In Ray Dream Studio, you can simply grab and move an object (here, one of the Dream Models that ships with the program) in a scene to establish a keyframe in the Time Line window.

In addition to the Modeling Wizard, which simplifies the creation of basic objects, Ray Dream Designer now has another automated "assistant" to guide users through the 3-D process: the Scene Wizard creates indoor, outdoor, and studio scenes, and provides step-by-step instructions for building custom scenes. The Shaders Editor lets you specify texture properties such as color, transparency, reflection, refraction, bump, shininess, highlight, and glow. More than 500 texture and shader combinations are included with the program.

Ray Dream Animator is an integrated extension that the company claims is the only 3-D animation program that provides timeline editing of all object parameters, including shaders. Ray Dream Animator Total Control Timeline lets you edit standard animation effects—such as position, scaling, and orientation—as well as advanced effects, such as spline-based shape changes, object behaviors, and object deformations. Ray Dream Animator supports rotoscoping, which allows you to insert QuickTime movie clips into animations, to be used as texture maps, paint shapes on objects, backgrounds, or light gels. Animator's inverse kinematics lets you link objects, define their relationships and constraints, and manipulate linked objects as a series of connected pieces.

Dream Models is a library of over 500 textured and editable models created by 3-D–modeling vendors ViewPoint Datalabs and Acuris. Ray Dream Extensions Portfolio has an extensible architecture that adds functions such as panoramic camera and layered fog.

Due by the end of 1995, Ray Dream Studio will retail for $499 on CD-ROM (upgrades will be $149) and is expected to sell in stores for less than $300.—C.A.

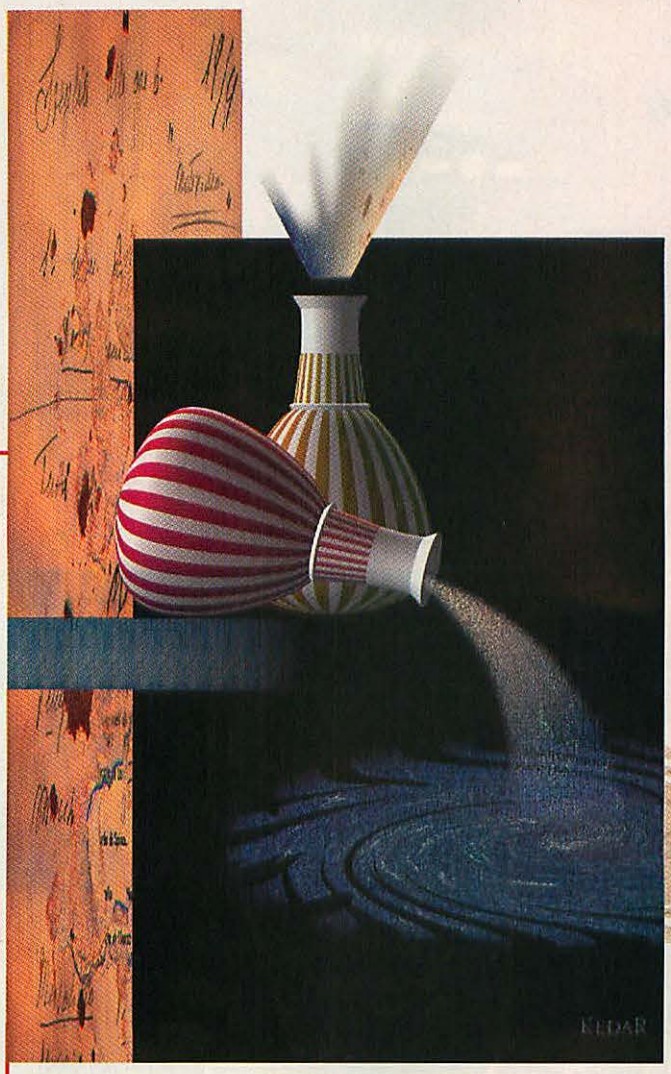
# Multimedia Authoring for Designers

DIGITAL BOX OFFICE, AVAILABLE NOW from Power Production Software (310/937-4411; **pps@netcom.com**), is geared for graphic designers and multimedia producers who find standard authoring tools too complex and time-consuming to master. Providing a combination of frame- and object-based authoring, Digital Box Office lets artists integrate images, sounds, text, and QuickTime movies into interactive multimedia shows without having to keep experienced programmers nearby.

Easy-to-use controls allow you to create actions and links for objects and frames, and to set effects, sounds, animations, and other attributes. Each frame can have multiple object layers, and you can draw new objects or modify existing ones from the program's libraries or your own customized libraries.

Digital Box Office's project-tracking database tracks objects, frames, and sequences, as well as creators and sources of project elements, and generates breakdown reports. The Link Overview feature provides a visual outline of your project's interactive paths. The program imports AIFF and SND resource files; imports and exports PICT files and QuickTime movies; and exports PICT objects, frames, and PowerPlayer (an interactive run-time player).

Digital Box Office lists for $599; a bundle with KPT Bryce, Fractal Design Poser, and Virtus VR is $799.—C.A.

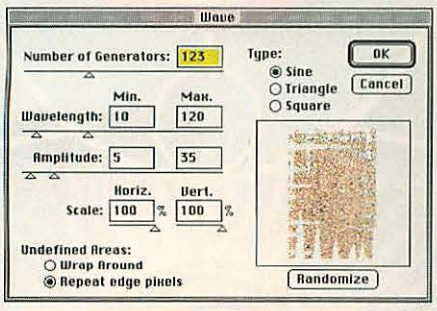





6 By setting a larger number of generators in the Wave filter, Kedar created a more distorted, splintered image with pieces of the background showing through. The result was a crisscross, jagged-edge shape.



7 Kedar next applied the Twirl filter to the jagged shape created by the Wave filter. This generated a more pronounced spiral shape, which in turn resulted in a more clearly defined whirlpool effect.




5 Photoshop's Wave filter set to a sine wave with 123 generators, 10 minimum and 120 maximum wavelength, 5 minimum and 35 maximum amplitude, horizontal and vertical scale of 100 percent, and repeat edge pixels for undefined areas.



8 After rotating the spiral to a horizontal position and inverting its color to blue, Kedar scaled it (with the Constrain Proportions and File Size check boxes deselected) to give the spiraling pool an appearance of perspective.

## THE TOOLS

**Hardware:** Quadra 950 with 64MB of RAM, 240MB internal hard drive, Toshiba XM3401TA internal (multisession Photo CD–capable) CD-ROM drive, and E-Machines Futura MX 24-bit color graphics card; 1GB Hammer external hard drive; 2GB APS Barracuda external hard drive; La Cie 24-bit Silverscanner; E-Machines ColorPage T16 II dual-resolution 16-inch monitor; PLI 44MB SyQuest removable-cartridge drive; APS 270MB SyQuest removable-cartridge drive.

**Software:** Adobe Photoshop 3.01; Adobe Dimensions 2.0; Adobe Illustrator 5.5.

Wonder how we did it? Globe map ❶ is dragged from Adobe Photoshop and dropped into place. Adobe Gallery Effects™ is used for embossed look. Background pattern ❷ is created in Adobe Illustrator and rasterized in place. Glowing Edges filter ❸ is applied and masked into shape. Cone ❹ is created using Adobe Dimensions. The twirl ❺ effect comes from a Photoshop plug-in. DNA tail ❻ ending in the "o" for boy created with Path Patterns. "Ray" effect ❼ comes from Create Star filter. Chip's red cap ❽ cut using knife tool. And by the way, separations and printing were done directly from Adobe Illustrator 6.0.




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# At Work

THE LATEST TOOLS FOR BUSINESS COMPUTING

## Paging Software Keeps Your Clients in Touch

YOU CAN BUY SOFTWARE THAT WILL send messages directly to paging services via modem, but what if it's your own hip business accessory that you want buzzing, beeping, or vibrating with incoming pages from clients and business prospects?

Two paging-software companies, MarkSpace (408/293-7299; **mspace@netcom.com**) and Ex Machina (800/804-8319; **notify@exmachina.com**), have introduced stripped-down versions of their software that you can hand out, so that anyone with a computer and modem can reach out and touch you over the airwaves.

MarkSpace's PageNow Friends and Associates Edition ($79.95) is a software factory that you configure with your personal and pager information, including full contact info (name, company address, E-mail address, pager number), a company logo PICT, and your pager type, so that users can see how their messages will appear. When you're satisfied with the setup, you crank out paging clients in the form of a double-clickable installer file (under 500K) that you can hand out on floppies or distribute via E-mail or the World Wide Web. PageNow offers several configuration options: you can protect the paging-client software with a password, you can set times during the day that you don't want to be paged, and you can have the paging client automatically add a predefined text string to all messages.

Ex Machina takes a different approach with its Reach Me paging software (aka the Wireless Business Card). You call Ex Machina with your name, paging service, and pager ID, and the company sends you a stack of preprogrammed floppy disks with custom labels. Ex Machina doesn't offer as many customization options as MarkSpace, but it has both Windows and Macintosh versions available. You can buy a 10-pack of disks in either configuration for $49.95, or a 50-pack for $149.95.—C.C.



FRANCISCO CACERES

## ProVue Expands Panorama 3.0

AFTER WAITING MORE THAN TWO years for a major update, users of ProVue Development's Panorama database are anticipating big changes in version 3.0, which is scheduled to ship in December. The new version will add full multiuser capability, an integrated word processor, new forms-creation and security features, support for AppleScript, and an improved programming language (including an interactive debugger).

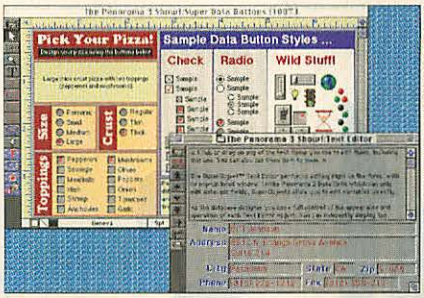
In order to welcome several users at once, ProVue (714/841-7779; **provue@aol.com**) has created a Partner/Server system for Panorama 3, in part by licensing a version of Everyware's Butler SQL server. The system provides full record-locking and automatic data synchronization—so a PowerBook user can modify a local copy of the database while on the road, and the database is automatically updated when the user reconnects to the network. Panorama 3 will automatically generate the needed SQL code when you convert a single-user file to multiuser.

The client-server model will also solve another nagging problem: since Panorama has always loaded the entire database into RAM, very large databases

have been limited in size to the amount of RAM installed in your computer. Version 3.0 will break this barrier by allowing subsets of large databases to be loaded into memory by the local machine, with the rest of the data residing on a networked server. Users will get the benefit of fast, RAM-based data manipulation and searches, without the size limitations of previous versions.

ProVue has rounded out a major architectural change with several welcome features. Panorama 3 will come with a full-featured word processing engine—users will have access to styled text and other advanced functions within database fields. Creating database screens and forms will be easier with the introduction of SuperObjects, which create buttons, lists, menus, scalable text and picture displays, and matrix objects (such as a calendar or multiple-column list) without programming. The user can pick from the hundreds of included SuperObjects or create original artwork. The new Automatic Geometry Management feature can automatically recolor, resize, and reposition windows and objects on forms to match the size and color depth of the user's screen. ProVue has also implemented a more complete security system, including users and groups, 255 access levels, and data-access restrictions on a field-by-field basis.

The price of the single-user version of Panorama 3 will remain unchanged at $395; pricing for the server version had not been set at press time.—TOM NEGRINO




**No More Boring Databases** ProVue ships a number of SuperObjects that make database creation easier and more lively, including this colorful collection of buttons.

## IN BRIEF

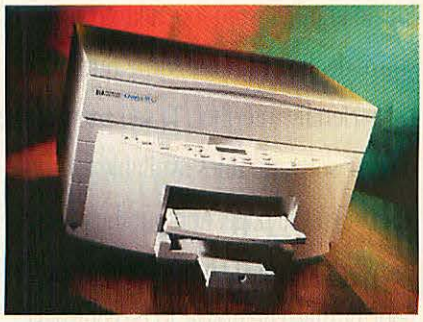
**Quicken Puts Banking Online** Intuit (415/322-0573) has announced that with version 6 of Quicken and Quicken Deluxe ($39.99 and $59.99 respectively, company's estimated street price), customers at 19 participating financial institutions will be able to download checking, savings, and charge card transactions at any time. The institutions will upload transaction information on a daily basis to Intuit, where the data will be encrypted and stored; Quicken 6 users will then dial Intuit directly to download the information. Individual banks and credit card providers will determine pricing for the service, but Intuit expects prices for online banking to be less than $3 per month.

Both versions are native for Power Macintoshes and have some new features, including an Easy-Answer function that automatically generates reports to answer such commonly asked questions as "What's my net worth?" The budgeting module has also been simplified. Quicken Deluxe 6 is a CD-ROM version that adds a Home Inventory module and semipersonalized QuickTime financial advice from Jane Bryant Quinn and Marshall Loeb. Both versions are expected to ship October 15, although online banking for Macintosh users won't be in place until the end of the year.

# Color Copies Come Cheaper

CONSIDERING THE COST OF PURCHASing a color copier, it's a wonder that companies don't spend a few days running off sheets of $100 bills, trying to recoup their investment. The Hewlett-Packard CopyJet M (208/323-2551; **http://www.hp.com**), a combination color printer and copier, offers ink-jet–quality prints for $3199 (company's estimated street price).

At the heart of the CopyJet M is a 300-dpi, plain-paper, color ink-jet engine based on HP's DeskJet 1200C; and a 600-dpi, 30-bit color scanner. As a copier, the CopyJet M can produce up to one letter-size color copy (or four black-and-white copies) per minute. It maxes out at legal size (8½ by 14 inches), and sports controls for fine-tuning your results, including color adjustment, lightness/darkness, and zooming. Lest we forget, the CopyJet M is also a Level 2 PostScript printer that can reach speeds of 3 pages per minute in color (7 ppm for black and white) and connects to your office Ethernet or LocalTalk network via an included HP JetDirect card.



SCOTT PETERSON

Hewlett-Packard estimates CopyJet output will run a measly 7 cents per page, considerably cheaper than the $1 to $1.50 charged by copy centers. But samples provided by HP don't approach the image quality available from a dedicated color copier. Also, the CopyJet M uses the same water-based ink as the DeskJet 1200C, so turning pages with a wet thumb buys you a fingerful of ink and a smudged document. Still, businesses may appreciate the opportunity to acquire a color copier for something less than a U.S. Treasury agent's ransom.—C.C.

# Networking Top Issue at MacIS

APPLE COMPUTER NEEDS TO FOCUS on improving network administration, as well as aggressively promote Copland and OpenDoc, according to a survey of Macintosh information systems managers. Networking issues stood out, taking the top two slots on a list of the ten issues most important for Apple to focus on, as recently voted by members of Managing Apple Computers in Information Systems (MacIS), based in Mason, Ohio.

MacIS members' top two requests were for Apple to

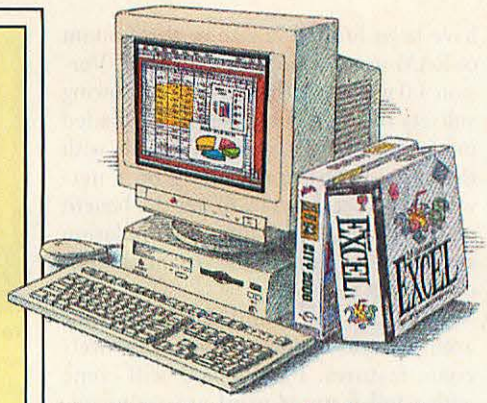
1. provide more-robust enterprise-configuration management, such as default configurations, network version control, and configuration locking;

2. unify and enhance network security and administration. Specifics include a single log-on to all network services, centralized auditing tools for management, and management capabilities for centralized users and groups in AppleShare.

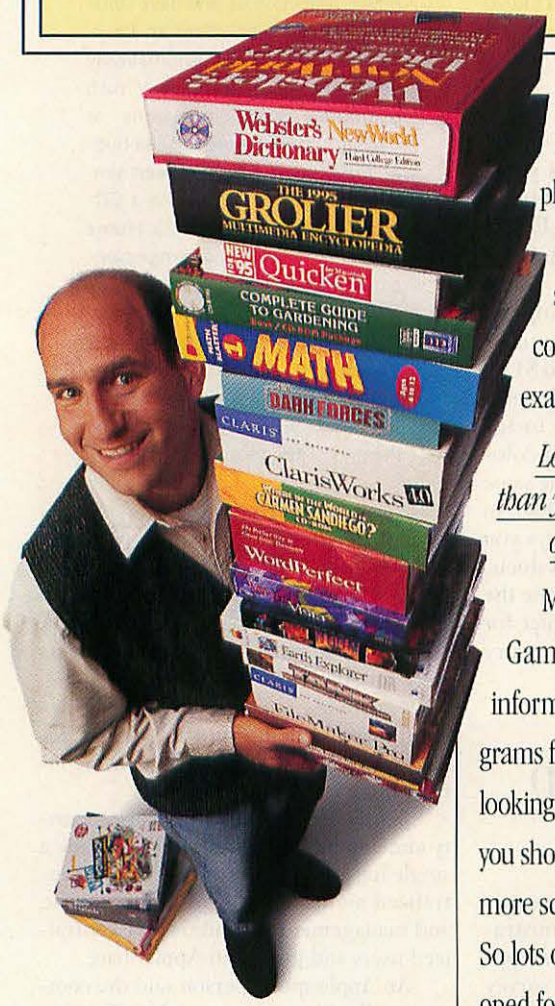
An Apple spokesperson said the company will address the latest MacIS issues in upcoming system and networking software releases, but said there were no specific announcements.—ELINOR MILLS

# Lots.
# Tons. Bunches.

(Somewhere in these 9,000 software titles, could someone please find the thesaurus?)




*It's good to know that the computer that takes you to the moon or the depths of the Pacific can also help you navigate the October sales forecast. Pictured here, the Performa® 6200.*



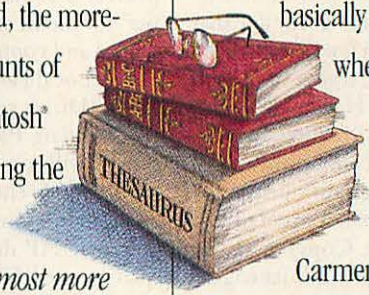

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A complete listing of deals on more than 100 software titles will be available online starting November 1. Point your web browser to **http://www.consumer.apple.com**. Or stop by eWorld,™ Apple's own online community; use the shortcut "**ACC**" then click the "**Apple Expo**" button.

Mac OS

While you're shopping, be sure to look for the Mac OS symbol. Software packages (as well as printers and other peripherals) bearing this mark run on the Mac OS, the friendliest operating system in the world, found in Macintosh and all Mac-compatible computers.

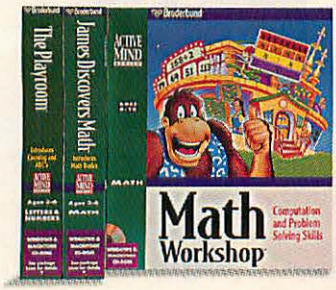
**All offers good only in the United States and for purchases made at retail Nov. 1, 1995, through Jan. 31, 1996. Please allow eight to ten weeks for delivery. Complete terms and conditions are on the redemption coupon at the back of this special advertising section.*

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### A world where learning comes to life.

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- Encourages active learning
- Developed in conjunction with educational specialists
- Provides progressive levels of challenge and hours of learning fun

Technology & Learning Award of Excellence, 1990
Seal of Approval from the National Parenting Center, 1991

Offer Code 147

## Sesame Street: Let's Make a Word! *by Creative Wonders*

NEW!




### Championing early reading skills.

After preschoolers learn their letters, they're ready for Let's Make a Word!™ Children ages 3–6 join their favorite Sesame Street® characters on the set of the "Let's Make a Word!" game show, hosted by the lovable Guy Smiley, to create 24 different word activity combinations. Kids choose from six different Muppet "word experts"—who each play a unique game—and four different environments—where they'll develop early reading skills.

- Provides motivation and positive feedback
- Animation, original music, authentic character voices, and Sesame Street humor enhance game play
- The most popular children's educational title

FREE software!



*Opening screen to the "Let's Make a Word!" game show—starring Guy Smiley.*

**Receive Sesame Street Numbers** ($39 value) **with your Sesame Street: Let's Make a Word proof of purchase.** Offer requires $4.95 shipping and handling. Make check or money order payable to TPI Promotional Marketing. Limit one product per customer.

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## Kid Works Deluxe *by Davidson & Associates, Inc.*

NEW!




### Build your child's creative skills.

Kid Works Deluxe™ is the all-new way for children ages 4–9 to maximize their creativity and imagination through writing and painting. Combining a word-processor and full-feature paint program into one kit, Kid Works Deluxe helps kids create their very own illustrated stories, poems, journals, and more. The program will even read their stories aloud, in a variety of fun voices or in the child's own voice!



- Create multimedia projects with words, pictures, and sounds
- Includes over 650 images and 100 sound effects
- Printable color illustrations and stories

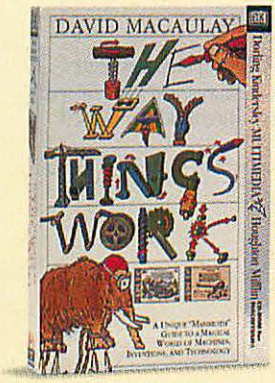
*Cool central interface provides easy access to all tools.*

$5 REBATE on your Kid Works Deluxe purchase.

Offer Code 105

## The Way Things Work *by DK Multimedia*

NEW!




### A "mammoth" guide to machines.

The Way Things Work is based on David Macaulay's best-selling book, which has sold more than three million copies. This multimedia masterpiece describes 200 machines in detail and also includes a "Who's Who of Inventors," an "Inventor's Workshop," and 20 humorous "Mammoth Movies" starring David Macaulay's famous woolly mammoth. Appropriate for ages 8 and up.

- Over 1,500 screens and pop-up windows
- More than 280 animations

SPA Codies Excellence in Software Award — Critic's Choice, 1995
Best Software for Children — Oppenheim Toy Portfolio

$5 REBATE on your The Way Things Work purchase.

Offer Code 144

## Thinkin' Things Collection 1 & 2 *by Edmark*




### Tools and toys to strengthen kids' thinking.

The Thinkin' Things Collections help children build critical-thinking, memory, creativity, and other essential learning skills. The highly acclaimed Thinkin' Things Collection 1 offers kids ages 4–8 six fun-filled activities that encourage experimentation, investigation, and creativity—while fostering self-esteem. Thinkin' Things Collection 2 uses five innovative activities to challenge kids ages 6–12 to strengthen observation and analysis, improve visual and auditory memory, develop spatial awareness, and advance creativity.

- Unique grow slides increase level of difficulty
- Both challenge and inspire young minds




**$5 REBATE** on your purchase of a Thinkin' Things Collection title.

Awarded 5 mice — *MacUser*

Offer Code 150

## Putt-Putt Saves The Zoo *by Humongous Entertainment*

NEW!




### Find the baby animals in time to open the zoo.

In Putt-Putt® Saves The Zoo,™ join Putt-Putt and Pep as they help Outback Al get ready to open the Cartown Zoo. There's so much to do: the bridge is out, zoo chow's running low, and six different baby animals are missing! Using secret click points, kids ages 3–8 can play ice hockey with a polar bear, make a bridge out of icebergs, send Putt-Putt and Pep swinging on vines over rivers filled with alligators, and more.

- Rich feature film-quality animation
- More than 25,000 hand-drawn frames of animation
- More than 500 secret click points
- 90 minutes of original music

**FREE book & audio tape!**



**Receive Putt-Putt's Night Before Christmas book and audio tape ($9.95 value) with your Putt-Putt Saves The Zoo proof of purchase. Offer requires $3 shipping and handling. Make check or money order payable to Humongous Entertainment.**

Offer Code 140

## JumpStart Kindergarten *by Knowledge Adventure, Inc.*

NEW!




### Get a head start on education.

Children ages 4–6 delight as Mr. Hopsalot, a cartoon bunny, helps them tell time, identify upper- and lower-case letters, rhyme words, match shapes, understand prepositions, recognize numbers, and sort objects that are either alike or different. Songs that teach the ABCs, anatomy, and animals can also be listened to on a home audio CD player. Creativity is inspired with an imbedded paint program that features printable screens—which can be colored on-screen or by hand.

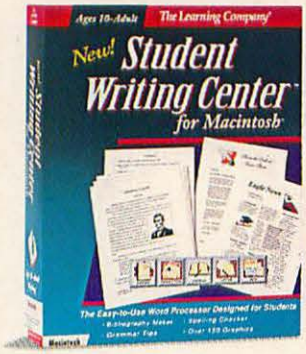


- Introduces and reinforces kindergarten-level curriculum
- Researched and developed under the direction of kindergarten teachers
- Includes "Bill's Guarantee" promising customer delight or a full refund

**$5 REBATE** on your JumpStart Kindergarten purchase.

Offer Code 138

## Student Writing Center *by The Learning Company*




### Hassle-free desktop publishing.

This best-selling writing and publishing program makes it easy for students ages 10 and up to create reports, newsletters, journals, letters, and signs. It automatically formats bibliographies, and includes a spell checker, a thesaurus, and a journal with password protection. It's award-winning software that helps children design their own documents—while building their self-esteem and improving their creative thinking.

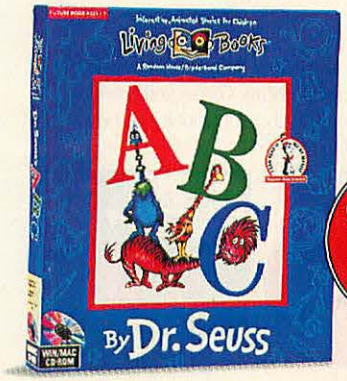
- Five preformatted document types
- Easy access, online writing and grammar tips

**$10 REBATE** on your Student Writing Center purchase.

Award of Excellence — *CD-ROM Today*, January 1995
Software Award for Excellence, Next in Series — *Technology & Learning*, 1994

## Dr. Seuss's ABC *by Living Books*

NEW!




### Dr. Seuss's extraordinary world comes to life.

"A" is for amazing alphabet. "B" is for beginning readers. "C" is for clicking on curious characters. The magic of Dr. Seuss's Beginner Book comes to life in this new addition to the popular Living Books® line of interactive stories on CD-ROM. More than 500 alphabetically inspired surprises, hidden within 26 pages, help children make the connection between words and sounds. Children ages 3–7 love to learn with the distinctive Seuss style of humor, rhyme, and animation.

$10 REBATE

- Dr. Seuss's Original Beginner Book included
- ABC Song sing-along included
- Soundtrack plays on home audio CD players

**Rebate valid for purchase of another Living Book title when you purchase Dr. Seuss's ABC (coupon in box).**

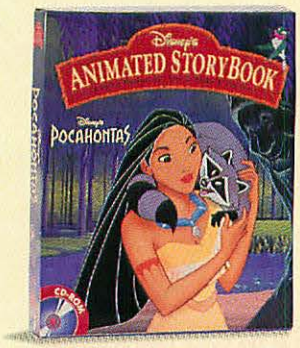



*Children can learn many words that begin with the letter "A" on the "A" page of Dr. Seuss's ABC*

**Offer Code 100**

## Pocahontas Animated Storybook *by Disney Interactive*

NEW!




### A story waiting for you to make it happen.

Children ages 3–8 enter Pocahontas' world and share her adventures, as she romps with Meeko and Flit and boldly saves Captain John Smith. Quality animation, created by Disney's Feature Animation artists, adds to the realism as children explore Native American and settler communities, a 17th-century sailing ship, and other beautiful environments.

The story is enhanced by four challenging games that build essential thinking skills, multiple playing levels to challenge new and experienced players, surprise animation for kids to discover on every page, and an Action Dictionary that lets kids see words defined with amusing animation.

FREE mouse pad!

- Relive the story at your own pace
- Interact with your favorite characters
- Click on words or pictures to discover surprise animations

**Receive a Pocahontas mouse pad with your Pocahontas Animated Storybook proof of purchase. Limit one free mouse pad per customer.**

## Oregon Trail II *by MECC*

NEW!




### Challenge the unpredictable Western frontier.

The perennial favorite of kids nationwide is now even better! Oregon Trail II is an award-winning interactive, multimedia virtual adventure that lets kids ages 10 and up become pioneers traveling westward through time. Set from 1840–1860, Oregon Trail II features three action-packed levels of play, digitized characters that offer advice, 3-D rendered towns and forts, video clips that provide users with a sense of the trail, realistic hunting for survival, and more. Give your kids an action-packed adventure of a lifetime.

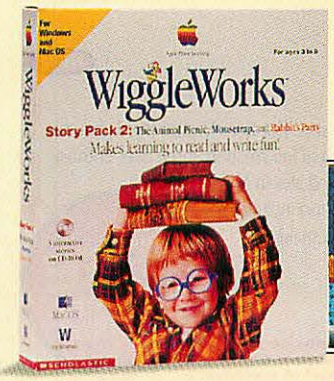
FREE video!

- Develops problem-solving and critical-thinking skills
- Over 5,000 photo-realistic images
- Long playability

**Receive "West to Oregon" video ($29.95 value) in box with your Oregon Trail II purchase.**

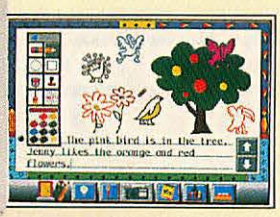
**Offer Code 110**

## WiggleWorks *by Apple Home Learning*




### Makes learning to read and write fun.

WiggleWorks™ is the classroom-proven software that's made it fun for thousands of children ages 3–8 to learn to read and write. It stimulates children's creativity while it teaches basic skills. Designed in partnership with Scholastic Inc., the leading educational publisher, it builds confidence at home—so kids have a head start in school. Its colorful characters and stories involve children and sustain their curiosity about words. And each story pack contains three stories, as well as activities that hold children's attention.



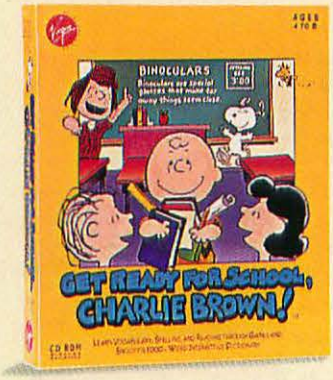

$5 REBATE on your WiggleWorks purchase.

- Helps kids learn the basics of reading and writing
- Fun activities expand kids' creativity
- Lets children work at their own pace

Awarded 3 stars — *Home PC*, 1995
Silver Apple Award, Multimedia Category — National Educational Media Network, 1995
Editors' Choice Award — *Newsweek*, 1995

## Get Ready For School, Charlie Brown! *by Virgin Sound and Vision*

NEW!




### An interactive Peanuts learning adventure.

Spend a fun-filled school day learning new words, spelling, and reading! Kids ages 4–8 enjoy classic television-style animation and original character voices as they learn through real-life situations and environments. Games and activities bring Snoopy's 1,000-word interactive picture dictionary to life, and kids can use Snoopy's dictionary to look up words found in the games. The dictionary includes definitions and sample sentences read aloud by your favorite characters, plus over 1,000 classic comic strips created by Charles M. Schulz.

- Vocabulary words, compiled by educators
- Seven fun learning games and real-life environments reinforce learning
- Three difficulty levels

FREE video!



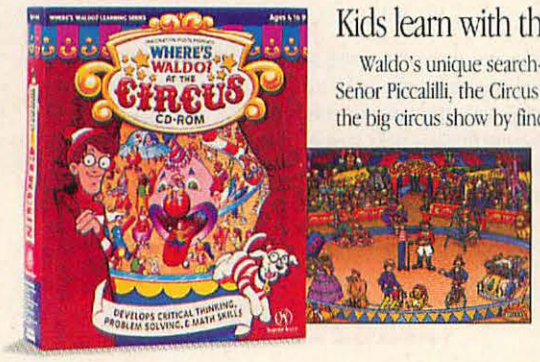
*Help Snoopy conquer his writer's block by choosing words for 15 stories.*

**Receive a Peanuts video ($9.99 value) in box when you purchase Get Ready For School, Charlie Brown!**

**Offer Code 120**

## Where's Waldo? At The Circus *by WarnerActive*

NEW!




### Kids learn with the greatest of ease.

Waldo's unique search-and-find approach teaches your child basic problem-solving skills using mathematical concepts. Señor Piccalilli, the Circus Ringmaster, needs your child's help in finding Waldo. Piccalilli, Waldo, and your child must save the big circus show by finding the ringmaster's magic golden whistle. After children find Waldo, they embark on a journey filled with fun and challenging learning exercises in different circus areas. As each area is completed, Waldo and your child collect the clues that will locate the missing whistle and save the circus!

- More than 20 educational exercises, each featuring five levels of difficulty, for ages 4–9
- Variable outcomes in all key areas
- Captivating animation and brilliant 256-color graphics

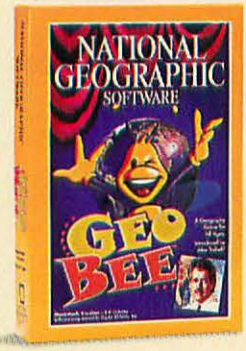
FREE book!

**Receive a Waldo activity book ($3.95 value) with your Where's Waldo? At The Circus proof of purchase.**

**Offer Code 115**

## GeoBee *by The National Geographic Society*

NEW!




### Test and improve your geographic knowledge.

Everyone's buzzing about GeoBee™—the new software game from The National Geographic Society. Featuring brain teasers drawn from the giant database of questions from the National Geography Bee, GeoBee brings all the fun, and nail-biting tension, of that national contest to your computer screen. Introduced by Alex Trebek, host and moderator of TV's "Jeopardy!," the game tests the geographic knowledge of up to four players at a time. Players must advance through three levels of difficulty to win the game. GeoBee's thousands of questions cover all aspects of world geography.



- Features over 3,000 questions
- Designed for up to four players, ages 10 and up

FREE software!

**Receive ZIPZAPMAP! USA ($39.95 value) with your GeoBee proof of purchase.**

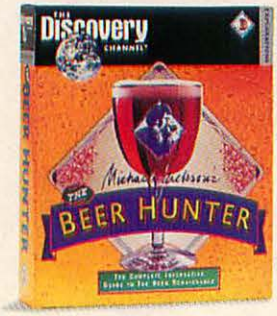
## Lifestyle / Reference



**Offer Code 165**

## The Beer Hunter *by Discovery Channel Multimedia*

NEW!




### Serving the beer connoisseur.

Join the North American beer renaissance with renowned English beer expert Michael Jackson. The Beer Hunter highlights the richness and diversity of the recent micro brewery revival in the United States, putting a wealth of information at the beer enthusiast's fingertips. Learn what qualities distinguish Michael Jackson's 24 favorite American beers and ales in MJ's Top 24 list. Search for brews by region, style, fermentation, color, and taste. The Beer Hunter also includes a section on the art of brewing, with tips on ingredients, equipment, and procedures needed for making great beer at home.

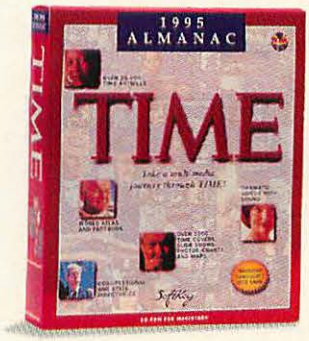
- Authoritative history of the art of brewing in text, photographs, and video clips
- Complete guide to U.S. micro breweries
- Includes Michael Jackson's top 24 brews, and where to find them
- Printable lists of recommended favorites to take on beer hunts

FREE software sampler!

**Receive a software sampler ($9.99 value) with your The Beer Hunter proof of purchase.**

Offer Code 177

## TIME Almanac '95 *by SoftKey*




### A multimedia journey through TIME.

Now you can relive the greatest triumphs and tragedies of the 20th century. Witness the bombing of the World Trade Center in New York, the signing of the Mideast Peace Accord, and the election of Nelson Mandela in South Africa. Meet the heroes and villains of history as you explore the past—decade by decade—simply by clicking on the topics which interest you. Review hundreds of photos, maps, and videos, plus thousands of riveting first-hand accounts of the century's most important events.

- Includes every TIME® article published from January 1989 through January 1995
- Over 400 tables and charts from *U.S. Statistical Abstracts*
- Features the complete *1994 CIA World Factbook*

"Best Almanac CD-ROM" — *Macworld*
Software Award of Excellence — *Technology & Learning Magazine*

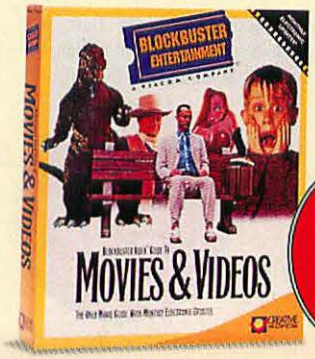
**FREE Instant Calendar!**

**Receive Instant Calendar** (*$12.99 value*) **with your TIME Almanac '95 proof of purchase.**

Offer Code 174

## Blockbuster Video Guide to Movies and Videos *by Creative Multimedia*

NEW!




### The only monthly movie guide with monthly electronic updates.

Whether you're a serious film buff or looking for just the right movie, this product is the ideal, up-to-date entertainment guide for the whole family. Get the scoop on how a movie rates with the critics in our comprehensive review section. Take a tour through the great movie genres. Step behind the scenes and learn all about your favorite actors. Find movies by title, actor or actress, director, MPAA rating, Academy Award® winners, genre, and much more.

- Select your favorite movie from over 21,000 titles
- 5,000 photographs and 40 video clips
- Features 4,000 biographies and videographies
- Discover over 65 years of Academy Award winners

**$2 REBATE on your Guide to Movies and Videos purchase.**

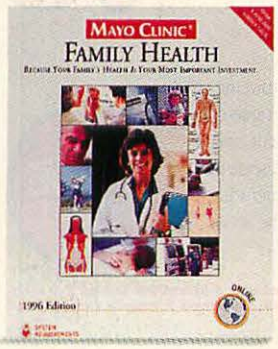



*The guide features movie reviews, photos, clips, and trivia questions.*

Offer Code 181

## Mayo Clinic Family Health 1996 Edition *by IVI Publishing, Inc.*

NEW VERSION




### Your comprehensive health reference.

Mayo Clinic,® a world leader in health care and medicine, and IVI Publishing present the newest version of the best-selling health CD-ROM, Mayo Clinic Family Health. Because your family's health is your most important investment, Mayo Clinic Family Health now allows you to keep records of your family's medical histories. It also provides a gateway into a Global Health Community online, direct from the CD-ROM. You'll find facts and multimedia illustrations of more than 1,000 medical conditions, and topics include prevention, life cycles, common symptoms, 911 emergency, and much more.



*Be prepared for an emergency.*

- Free Internet navigator included for access to online health community
- Drug Reference allows you to check information and interaction on over 3,000 drugs
- Poison Guide lets you see common household poisons through the eyes of a child

**$10 REBATE on your Mayo Clinic Family Health purchase.**

Offer Code 169

Better Homes and Gardens Presents

## Great American Cooking *by Multicom Publishing*

NEW!




### Mouthwatering recipes from across the country.

Featuring over 500 recipes, this delightfully interactive CD-ROM culinary guide simmers with multimedia features that help you become a cooking and meal planning expert, including essential step-by-step instructions that guide you through each recipe. With more than 125 helpful cooking videos, plus nutrition information, printable shopping lists, meal planning tools, and a powerful yet simple-to-use recipe finder, you'll never cook the same way again!



*Essential instructions guide you to your finished dish.*

- Each recipe has been tested for quality and flavor by the experts at the Better Homes and Gardens® Test Kitchen
- Features beautiful photographs throughout

**$10 REBATE on your BH&G Great American Cooking purchase.**

To get your hot deals, see the Redemption Coupon near the back of this special advertising section.

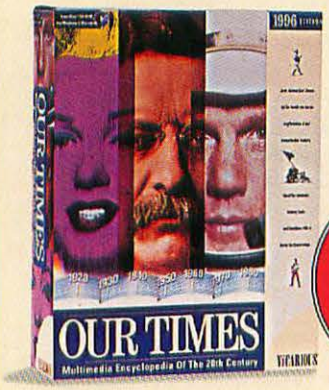
Lifestyle/Reference

To get your hot deals, see the Redemption Coupon near the back of this special advertising section.

Offer Code 184

## Our Times Multimedia Encyclopedia Of The 20th Century *by Vicarious, Inc.*

NEW!




### Live and relive the defining moments of our times.

Narrated by the captivating James Earl Jones, Our Times™ is the fun and fascinating way to learn about 20th-century world affairs, science and technology, politics, sports, cultural trends, and art. Based on the best-selling book—and cross-referenced with *The Columbia Encyclopedia, Fifth Edition*—Our Times provides information on topics both within and beyond the 20th century. A robust search engine and over 65,000 hypertext links provide easy access to vast amounts of information. With over 52,000 articles, eight million words, 2,500 images, charts, maps and graphs, 120 minutes of narration, and in-depth video documentaries, Our Times is the ideal reference source.

$10 REBATE on your Our Times purchase.

- Kids will be immersed in 20th-century history
- Students can easily access information to create reports
- Families come together to live and relive the 20th century




*The visually interactive timeline is always available for ready access to each decade and year.*

Offer Code 170

## Home Repair Encyclopedia *by Books That Work*

NEW!




### Meet your interactive handyman.

Home Repair Encyclopedia gives you the confidence to tackle do-it-yourself projects—while saving time and money! Built with multimedia guides and detailed instructions to keep your home running smoothly, it features built-in software calculators that take the guesswork out of selecting and estimating your building materials. It also offers expert advice, helpful hints, detailed reference guides, illustrated animations, and diagrams, as well as cross-linked explanations.



*Detailed instructions help you keep your home in shape.*

- Detailed explanations and instructions, illustrated with animations
- Includes tips from the pros
- Powerful search feature lets you find answers quickly

$5 REBATE on your Home Repair Encyclopedia purchase.

## Home Entertainment

Offer Code 210

## Marathon 2: Durandal *by Bungie Software*

NEW!



### The captivating adventure continues.

The designers of the award-winning action adventure game Marathon have unleashed their most stunning creation yet, Marathon 2: Durandal. Fresh from your triumph on the starship Marathon, you are seized by the rogue computer Durandal and forced to do his bidding in a distant part of the galaxy. Within the ruins of an ancient civilization, you must seek the remnants of a lost clan and uncover their long-buried secrets. Whether you choose first-person action or network play, the outdoor and underwater environments, ambient sounds, and widescreen format will immerse you in the action.



- Networkable for up to eight players
- Environments, sounds, and widescreen format place you in the middle of the action

FREE poster!

**Receive a Marathon poster (*10 value) with your Marathon 2 proof of purchase.**

Offer Code 189

## Absolute Zero *by Domark Software, Inc.*

NEW VERSION




### Forget winning; think survival.

An alien invasion from the once-dormant core of Europa has instantly transformed your peaceful mining colony into a war zone. In order to mount a defense, you must first figure out how to convert your mining machinery—hovercraft, maglocks, fuel stations, and more—into weapons of war.

Fly up to 30 missions in three different arenas of war: space, surface, and subterranean areas. To conquer the attacking aliens, you'll have seven characters, seven vehicles, and 13 weapons systems at your disposal. Now, it's just a matter of surviving.



*Think quick! Your colony's being attacked.*

- Full-motion video sequences and interactive CD soundtrack
- Over 70 texture-mapped active objects on-screen simultaneously
- Fly and drive seven different vehicles with 13 different weapons systems

$10 REBATE when you purchase both Tank Commander and Absolute Zero.

Offer Code 186

## Doom II *by GT Interactive*

NEW!




### The game you've been waiting for.

Take a deep breath; the fiendish monsters and vicious slime of Doom II™ are here to challenge you to all-new, heart-pounding combat. This version of the megahit contains every one of the 30 fiercest, most action-packed levels, plus 3-D texture-mapped graphics—with four times the resolution of the PC version! For even more thrills, Doom II comes with complete networking capabilities for Mac-to-PC and Mac-to-Mac play, including AppleTalk.® Available on CD-ROM or 3½" diskette. Appropriate for ages 17 and up.

- Integrated Macintosh interface with customizable keys, standard Mac menu commands, and other options
- Direct WAD File Support to download all the "home-brew" Doom™ levels available online
- Sharper graphics than ever with increased resolution—up to 640 x 400 pixels



*Battle fiendish monsters through 30 heart-pounding levels of all-out action.*

FREE poster!

Editor's Choice Award, 1st Choice for Best Game — *Electronic Entertainment*, 1995
Codies Award — Best Action Arcade Program, 1995

**Receive an exclusive Doom II poster** (†6 value) **with your Doom II proof of purchase.**

Offer Code 187

## F/A-18 Hornet 2.0 *by Graphic Simulations*

NEW VERSION




### Fly the dangerous skies.

Each mission takes you deep into a new conflict in the Middle East, flying against the newest technology and the best-trained pilots the enemies of freedom can produce. Voice messages guide you during airbase/carrier operations and provide crucial air combat information. Use your APT-65 radar system and Radar Warning Receiver to stay aware; fire off your M61 Vulcan cannon or Sidewinder and AMRAAM missiles for air-to-air defenses. Laser-guided bombs or HARM and Maverick Missiles provide the most effective and destructive air-to-ground ordnance available.

- Connect up to four computers via AppleTalk network for multiple-player action (additional purchase required)
- Radio voice messages from the ground and the air keep you constantly aware

Best Flight Simulator — *Macworld* Game Hall of Fame, 1994
Flight Simulator of the Year — *Inside Mac Games*, 1993



*"Here's that AIM-9 Sidewinder you ordered!"*

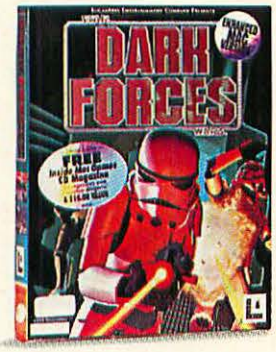
FREE game enhancer!

**Receive a game enhancer** (†19.99 value) **with your F/A-18 Hornet 2.0 proof of purchase.**

Offer Code 195

## Dark Forces *by LucasArts Entertainment Company*

NEW!




### All-out war in the *Star Wars* universe.

Behind a veil of secrecy, the evil Empire is creating a doomsday army—one that, if completed, will become the final cog in the Empire's arsenal of terror and domination. Your mission? Join the rebel Alliance's covert operations division, infiltrate the Empire, then battle every man and machine the Imperial Forces can muster. Search a vast galaxy for clues and attack enemy bases—all in a desperate attempt to stop the activation of this fearsome new weapon.

- Use 10 lethal weapons to fight 20 types of enemies
- Explore the richly detailed *Star Wars* universe
- Fully interactive environments

Awarded 5 stars — *Multimedia World* All-Star
Computer Player Recommended "Perfect 10 score"



*Get up close and personal with stormtroopers.*

FREE software!

**Receive Rebel Assault Special Edition CD-ROM** (†6 value) **with your Dark Forces™ proof of purchase.**

Offer Code 218

## Descent *by MacPlay*




Parallax Software

### Hold onto your seat. . .and your lunch.

This mind-boggling, action-packed shoot 'em up by MacPlay™ will have you blasting your way through a galaxy of 30 mind-bending, stomach-churning, robot-infested levels. Be warned: These creatures learn quickly, adjusting their tactics based on your actions. Featuring eyeball-bulging 3-D worlds with light-source shading, texture mapping, directional sound effects, and sizzling music, Descent® takes technology and excitement to a shattering new level. Up becomes down and then up again, with true 360-degree gameplay.

- Multi-player action with eight-player network and tournament mode, and two-player head-to-head modem support to play Mac-to-Mac or Mac-to-PC
- The only game of its kind with a full 360-degree 3-D environment
- Multi-directional sound effects and blazing musical scores
- #1 on the Internet Top 100 Games list for eight months



*Enemies come at you from all angles as you move through stomach-churning 360-degree gameplay.*

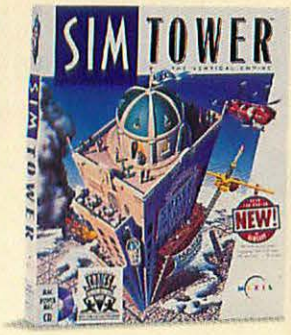
FREE T-shirt!

**Receive a free MacPlay T-shirt** (†15 value) **when you purchase both Descent and Frankenstein.**

To get your hot deals, see the Redemption Coupon near the back of this special advertising section.

Offer Code 194

## SimTower *by Maxis*




### The world's largest fixer-upper.

Reach for the sky with SimTower!™ Start with a small office complex—a lobby, a few offices, and a café—and expand with more floors, offices, and elevators until you've created the ultimate skyscraper. Diversify your business into hotel rooms, shops, theaters, restaurants, condos, and more, as you build your way to the top. Create massive underground parking garages, and transport your building's occupants via an intricate elevator system you design, schedule, and refine. Look out for fires, roach infestation, and even terrorists. It's all in a day's work managing SimTower, your vertical empire.

- Monitor the profitability of your building
- Work your way up from a one-star building to a five-star tower
- Lure new tenants by adjusting rents and adding amenities

$5 rebate coupon toward the purchase of another Maxis title when you purchase SimTower.



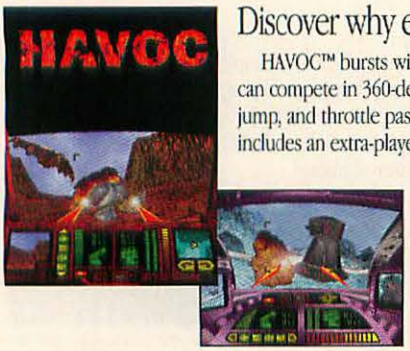
*Run your tower as a business and use the profits to build, build, build.*

Software Publishers' Association Codies Award — Best Simulation, 1995

Offer Code 191

## HAVOC *by Reality Bytes*

NEW!




### Discover why everyone's screaming about HAVOC.

HAVOC™ bursts with multiplayer 3-D energy, fully exploiting the latest in 3-D hardware acceleration from Apple. Kids ages 10 and up can compete in 360-degree outdoor action over 3-D post-apocalyptic terrain. Command a BattleCycle, HyperTank, or HoverCraft. Blast, jump, and throttle past opponents over a network or modem, or challenge yourself in arcade missions. An industry first, HAVOC also includes an extra-player CD that you can share with friends—regardless of whether they have Mac OS or Windows® 95. You can even wreak HAVOC by your voice commands, with support for Apple PlainTalk.™

- 360-degree outdoor arcade action and real 3-D texture-mapped enemies
- Play over network or modem against Mac OS or Windows 95 opponents on cross-platform CD
- Screams with the latest 3-D hardware acceleration, 3-D graphics, and stereo sound

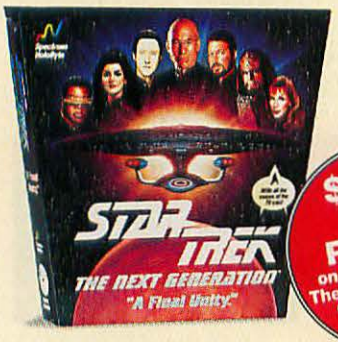
FREE T-shirt!

**Receive a HAVOC 3-D black T-shirt** ($18 value) **with your HAVOC proof of purchase.**

Offer Code 206

## Star Trek: The Next Generation "A Final Unity" *by Spectrum HoloByte*

NEW!




$10 REBATE on your Star Trek: The Next Generation "A Final Unity" purchase.

### Make it so.

The crew's all here. Riker.™ Worf.™ Data.™ Troi.™ And, of course, Captain Picard. You hear Riker report that a ship is speeding through the forbidden Neutral Zone. Data announces they're Garidian, and Troi explains they may be on friendly terms with the Romulans. Captain Picard orders an intercept. Suddenly you're there, too.

Part of an original interactive mystery. Part of an epic intergalactic adventure which will take you from the outposts of Federation space, through treacherous shields-up confrontations, and beyond—into the uncharted dangers of a massive nebula.

- Dazzling 3-D graphics and cinematic sequences
- With all the voices of the TV cast
- Control the seven main characters

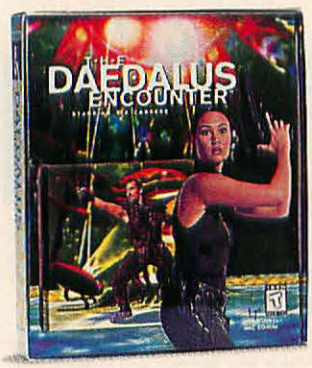


*Now you're in command of the Starship Enterprise. Take the Bridge!*

Offer Code 201

## The Daedalus Encounter *by Virgin Interactive Entertainment*

NEW!




### A star-powered sci-fi thriller.

Voyage through deep space with Tia Carrere in an interactive thriller that plays as smooth as it looks. In the cold, dark heart of a ravaged galaxy, a scavenger ship is being dragged at blistering speed toward the scorching center of an alien sun. Only you—an intergalactic war vet, more machine than man—can unlock the mysteries of an eerie 3-D rendered vessel and ward off vicious alien attacks in order to save your old comrades Ari (Carrere) and Zack (Christian Bocher) from involuntary solar cremation.

- Three CDs of sci-fi adventure and exploration gameplay, plus complex puzzle solving
- Three levels of increasing difficulty and multiple endings
- Hyper-real 3-D environments and navigable QuickTime® video

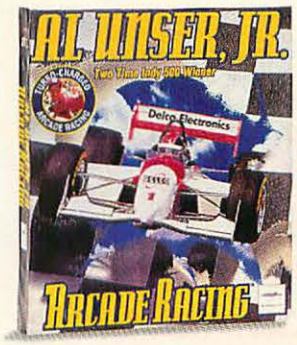
$5 REBATE on your The Daedalus Encounter purchase.

Thumbs Up Award — *New Media*
Finalist — *New Media* INVISION Awards, Adventure/Role Playing Games Category

Offer Code 197

## Al Unser, Jr. Arcade Racing *by Mindscape*

NEW!




### This is no Sunday drive in the country.

Feel the need for speed? Well, you're in for the white-knuckle ride of your life! Circle the track alone, feeling out your car. Then blast into Competition mode, where you're suddenly up against 10 of the most cunning drivers around. They'll instinctively respond to your car's every move as you race them over 15 different courses at raging speeds.



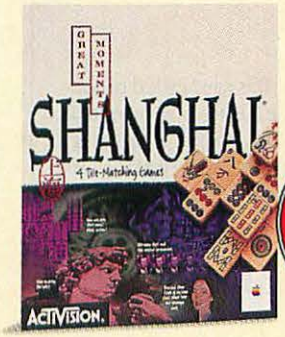
*You're in the driver's seat, racing against 10 of the top drivers around.*

- Play over a network in Duel mode
- Race in four turbo-powered modes
- 15 challenging courses

**$5 REBATE on your Al Unser, Jr. Arcade Racing purchase.**

Offer Code 225

## Shanghai: Great Moments *by Activision*




### The tile-matching obsession returns.

Classic Shanghai® returns, with three new games. In Beijing, you must slide rows of tiles to make a match, but be careful—one wrong match and a triple-scoring move disappears. At The Great Wall, it's you against a wall of tiles, snapping pairs off to dismantle its mighty structure—while gravity holds true, and tiles fall as lower ones are removed. Action Shanghai dares you to clear the screen before additional tiles appear. Speed is a factor, as stacks of tiles grow higher and block those that were once free.

**FREE software!**

- Themed video clips, animations, speech, and sound effects
- Nine interchangeable tile sets
- Play in solitaire, two-player, or tournament mode

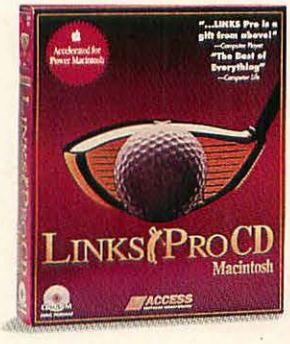


**Receive Sargon V ($24.95 value) with your Shanghai: Great Moments proof of purchase.** Offer requires $5.95 shipping and handling. Make check or money order payable to Activision.

Offer Code 211

## Links Pro CD Macintosh *by Access Software*

11 NEW!




### Tee up for great golf.

From tee to green, Links Pro CD Macintosh is unrivaled in recreating the true golfing experience. It's Power Macintosh compatible for faster game play, and it features AppleTalk network play—so you can golf with up to seven other players. Two world-class golf courses, Harbour Town Golf Links and Banff Springs, have been reproduced in painstaking detail—you'll feel as if you're actually there! Simulated aerial fly-bys, golf tips, digital music, and a "comic caddie" option all help make your desktop golfing experience complete.

- Features AppleTalk network play
- Voice recognition
- New sound options

Codies Award, Best Sports Game — Software Publishers' Association
Hall of Fame — *Computer Gaming World*



*One of the many beautifully rendered golf courses available.*

**FREE software!**

**Receive Bountiful Golf Club Course CD-ROM ($29.95 value) with your Links Pro CD-ROM proof of purchase.**

Offer Code 200

## Buried In Time: The Journeyman Project II *by Sanctuary Woods*

NEW!




### Now's the time to act.

Travel through time as Agent 5, searching for clues—in both past and future worlds—in order to avoid being framed for a crime you didn't commit. The long awaited sequel to the hit The Journeyman Project TURBO, Buried in Time is an epic graphic adventure that uses the latest technology to incorporate live-action video, 3-D animation, and an original stereo soundtrack to create an engaging and realistic cinematic experience.

**$10 REBATE on your Buried in Time purchase.**

- Over 25,000 rendered images
- Captivating original soundtrack and effects
- Vivid live-action video sequences and 3-D environments

INVISION Gold Award for Best Animation — *New Media*, 1995
INVISION Bronze Award for Story & Script — *New Media*, 1995

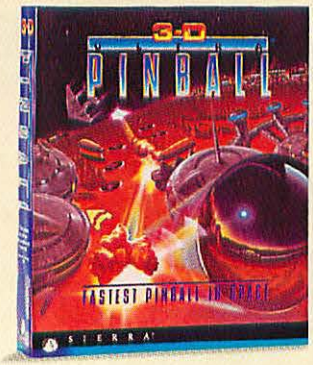


*Immerse yourself in exploration of seven photo-realistic worlds.*

To get your hot deals, see the Redemption Coupon near the back of this special advertising section.

Offer Code 213

## 3-D Ultra Pinball *by Sierra On-Line*




### Play outside the limits.

Snap back the plunger, then let it rip. Send your pinball to three out-of-this-world play fields: a cavernous space mine, a gritty command post, and The Colony—the mother of all manic action pinball tables. Bank the right sequence of shots and you'll be able to warp between tables, taking the pinballs you have in play along with you. Feel the friction of the flippers as you play 3-D ramps and bumpers so huge, so intense, they pull traditional pinball kicking and screaming to a higher level.



*Ultra-fast multi-ball play puts you into the play field.*

- Authentic incline and realistic gameplay
- Non-scrolling tables
- Stunning 3-D graphics and realistic sound effects

**Buy 2, get 1 FREE!**

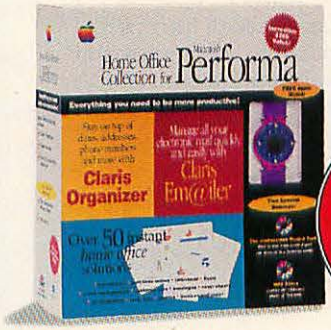
**Purchase 3-D Ultra Pinball plus either Space Quest 6 or The Lost Mind of Dr. Brain, and receive Lode Runner ($49.95 value) free.**
Offer requires $4.95 shipping and handling. Make check or money order payable to Sierra On-Line.



## Home Office

## Home Office Collection for Macintosh Performa *by Claris*

NEW!




### Get your home office organized and productive in no time.

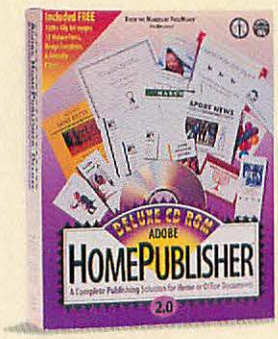
Start up your home office right with Apple Home Office Collection for Macintosh Performa. This value-packed bundle includes powerful applications to help you be more productive with all your home business computing tasks. You'll make the most of your time using versatile Claris® Organizer,® new Claris Emailer,™ time-saving templates for ClarisWorks,® and ready-to-use business solutions based on best-selling FileMaker® Pro. Then with all the time you save, you can spend it enjoying one of two exciting interactive adventures: Wild Africa or The Journeyman Project TURBO.

**SPECIAL VALUE Get a $265 software value for just $99 at retail.**

- Save valuable time with four productivity software solutions
- Relax and unwind with two exciting multimedia titles
- Includes a FREE Apple watch

Offer Code 249

## Adobe HomePublisher Deluxe 2.0 CD *by Adobe Systems Inc.*




### Your complete document publishing solution.

Adobe™ HomePublisher™ Deluxe includes everything you need to create first-class publications—newsletters, flyers, brochures, and more—without any previous desktop publishing experience. Easy-to-use "intelligent" templates guide you through simple design choices, then automatically create a document tailored to your needs. In minutes, you'll have the quality results you once thought only a professional designer could create! With over 1,500 color and black-and-white clip art images, you'll be able to create a sophisticated image for your business stationery, or design effective newsletters with a polished look.

- Includes more than 50 templates
- Free online clip art catalog browser
- Free fonts and specialty papers provided
- Built-in word processor, spell checker, and thesaurus

Editors' Choice Award — *MacUser*
Editors' Pick — *Home Office Computing*, 1995

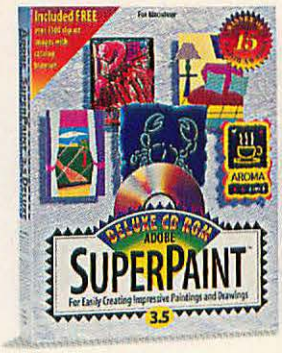
**FREE software!**

**Receive Adobe TypeTwister ($49.99 value) with your HomePublisher proof of purchase.**
Offer requires $7.50 shipping and handling. Make check or money order payable to Adobe Systems Inc.

Offer Code 250

## Adobe SuperPaint Deluxe 3.5 CD *by Adobe Systems Inc.*

NEW!




### Create sophisticated paintings and drawings.

SuperPaint™ is recognized worldwide as one of the easiest to use, yet most powerful graphics programs around. The user-friendly interface guides you step-by-step throughout the design process, allowing you to create exceptional quality designs in minutes. Use any paint or draw tool with unique fill effects such as textures, patterns, gradients, and colors. And by using the online art catalog browser, your works of art will be completed in no time!



*Apply gradient tints to images and choose from a variety of pre-designed textures.*

- Unlimited design opportunities
- 16.8 million color varieties
- Over 1,500 color and black-and-white clip art images

**FREE software!**

**Receive Adobe TypeTwister ($49.99 value) with your SuperPaint Deluxe proof of purchase.** Offer requires $7.50 shipping and handling. Make check or money order payable to Adobe Systems Inc.

Offer Code 241

## Quicken 6 *by Intuit, Inc.*

NEW VERSION




### Faster, easier, and more flexible than ever.

Quicken® is the fastest, easiest way to organize your finances. Quicken tracks it all—checking, savings, credit cards, investments, loans, and more. With Quicken you'll always know how much money you have, and exactly where it's going. Revealing reports and graphs show you where your money is spent, how your investments are doing, and more. Plan for retirement, tax time, college tuition, buying a home, refinancing a mortgage—even a vacation.

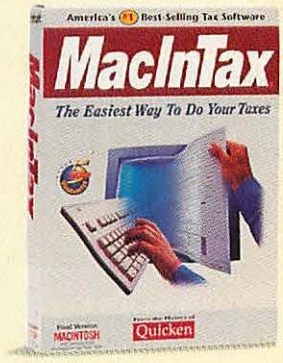
- Looks like your paper checkbook so you can get started right away
- Pays bills, prints checks, and reconciles your bank account in less time than it takes by hand
- Includes coupon for free online banking software—available late 1995

Editors' Choice Award — *Mac Home Journal*, 1995
Awarded 4½ mice — *MacUser*

**$5 REBATE on your Quicken 6 purchase.**

## MacInTax & MacInTax Deluxe *by Intuit, Inc.*

NEW!




### The easiest way to do your taxes.

This tax season, put America's #1 best-selling tax software for the Macintosh to work for you! MacInTax makes preparing your taxes easy, in three easy steps. Step 1: Answer MacInTax's easy-to-understand interview questions. Step 2: MacInTax double-checks your return. Step 3: Print ready-to-file forms on plain white paper, sign them, and drop them in the mail.

MacInTax Deluxe on CD-ROM includes video tax tips and the Tax Library, a collection of on-screen books and 30 IRS Publications that provide you with all the information you need to save money on your taxes.

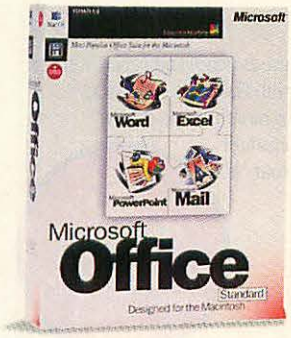
- Guaranteed accurate calculations. If the IRS penalizes you due to a calculation error in MacInTax, Intuit will pay the penalty plus any interest
- If you're not satisfied with MacInTax, Intuit will refund your money

Awarded 5 stars — *ComputerLife*, February 1995
Awarded 4½ mice — *MacUser*, February 1995

**$5 REBATE** coupon in specially marked packages of MacInTax and MacInTax Deluxe.

Offer Code 246

## Microsoft Office version 4.2.1 *by Microsoft*




### Multiple programs that work together as one.

The most popular set of programs for the Macintosh, Microsoft® Office includes Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and a Microsoft Mail workstation license. Microsoft Office takes you well beyond the traditional approach to ease of use, integration, customer solutions, and compatibility with Office family programs for Windows. Office was designed with IntelliSense™ technology, so it senses what you want to do and intelligently produces the desired result. IntelliSense makes routine tasks automatic and complex tasks far simpler. Office also maximizes your Macintosh by supporting key Apple technologies.

- Focus on your analysis and not your data with the PivotTable™ Wizard
- Pick a Look Wizard gives your presentation the custom look you want

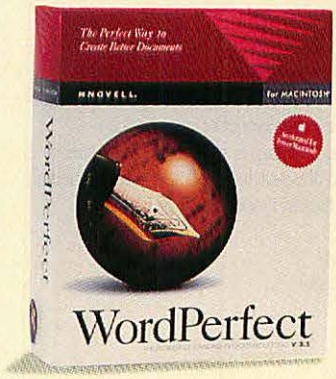
**$50 REBATE**

**Offer valid when you purchase Microsoft Office 4.2.1, plus one of the following titles: Connectix RAM Doubler,™ Microsoft Encarta '95, or Microsoft Bookshelf '95.**

Offer Code 247

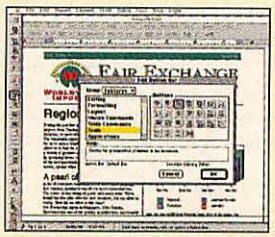
## WordPerfect 3.5 *by Novell, Inc.*

NEW VERSION




### Work faster, smarter, easier.

Reports, letters, budgets, long documents—any task is a snap with WordPerfect® 3.5. It corrects grammatical errors, fits text into pages, formats documents, corrects typos as you work, and much more. All tools are easy to access, and it's simple to complete many complex tasks with just one click. Plus, WordPerfect 3.5 supports all of the advanced Mac technologies. Superior quality, comprehensive word processing, and intuitive features: It all adds up to the power to do your best, quickly and easily.




*WordPerfect 3.5 helps you work faster and easier.*

- Read and publish information from the Internet
- 85 pre-designed templates
- Features tables, bookmarks, and macros

**$20 REBATE on your purchase of a new package of WordPerfect 3.5.** Not valid on upgrades.

To get your hot deals, see the Redemption Coupon near the back of this special advertising section.

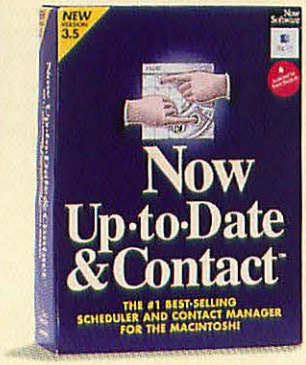
Home Office

To get your hot deals, see the Redemption Coupon near the back of this special advertising section.

Offer Code 235

## Now Up-to-Date & Contact 3.5 *by Now Software, Inc.*

NEW VERSION




### Keep essential information at your fingertips.

This best-selling calendar and contact manager for the Macintosh keeps your daily schedule and phone list attached to the menu bar for instant, single-click access from any application. QuickPad™ allows you to jot down to-dos and phone messages on the fly, automatically entering them in your calendar and address book—all without launching the main application. Great looking built-in templates are included for address books, envelopes, labels, and all popular appointment book sizes. Now, no matter where you are, your information's always there when you need it.

- Contains everything you need to manage schedules, contacts, appointments, and to-do lists
- View your day at a glance, or get a list of key names and phone numbers, no matter what program you're running
- Automatically looks up names and numbers, and captures to-dos on-the-fly
- Prints easily to paper organizers, labels, and envelopes

World Class Winner — *Macworld*, 1994
Editors' Choice Award — *MacUser*, 1993

**$25 REBATE** on your Now Up-to-Date & Contact 3.5 purchase.

Offer Code 239

## Incredible Image Pak 25,000 *by T/Maker Company*

NEW!




### The most "incredible" image library available.

T/Maker's classic ClickArt collection has now grown to include over 25,000 unique, high-quality images in more than 125 categories. Plus, all 25,000 images are specially designed to print at the highest possible resolution on either color or black-and-white printers. And, as if that weren't already enough, Incredible Image Pak 25,000 also includes a bonus collection of 1,000 TrueType® ClickArt fonts, free! It's an outstanding collection sure to help you present the right image for your project.

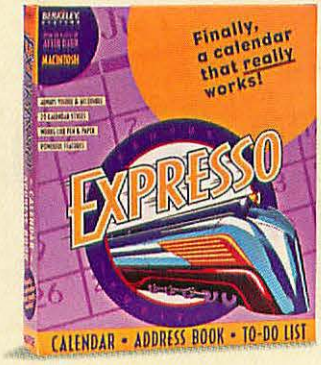
- Available in Macintosh-standard EPS format
- Free Kudd™ Image Browser, handwritten fonts, and ClickArt Preview collections
- ClickArt Design Handbook is packed with tips, tricks, and techniques
- Electronic documentation

Editors' Choice Award as one of the top 100 products of 1995 — *HomePC*
Editors' Choice Award — *Macworld*, 1994, 1993

**$10 REBATE** on your Incredible Image Pak 25,000 purchase.

Offer Code 234

## Expresso Calendar & Address Book *by Berkeley Systems*




### The calendar that works the way you do.

The Expresso™ Calendar & Address Book is the first computer calendar that's as easy to use as pencil and paper. With the click-and-type format, you'll never see a dialog box or have to navigate clumsy menus. And, with FlashBack technology (patent pending), your calendar is always accessible from any program. View your calendar by month, week, or day. Set priorities with the to-do list. Print your calendar and address book in the most popular organizer sizes and styles. Take your calendar on the road and update your old version automatically with the synchronize feature.



- Set alarms, recurring events, or private events quickly and easily
- Choose from over 20 attractive backgrounds
- Import data from other calendar products
- Drag and drop to link names and addresses to your calendar

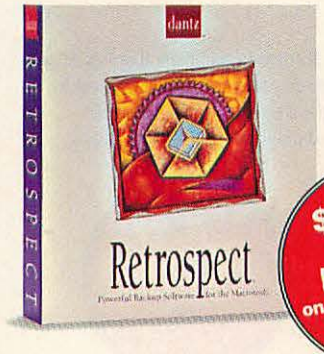
*Your calendar is always at your fingertips.*

**$5 REBATE** on your Expresso Calendar & Address Book purchase.

Offer Code 232

## Retrospect 3.0 *by Dantz Development Corporation*

NEW VERSION




### Powerful backup software for the Macintosh.

Protect your computer files from hard disk crash, fire, theft, or other unforeseen disasters with Retrospect,® the most trusted and recommended backup software in the industry. Whether you choose to perform immediate backups or schedule a completely unattended backup, Retrospect's EasyScript™ makes it simple to automate every aspect of your backup—including which files to back up, where to put them, and when to do it. When a backup is scheduled, Retrospect automatically scans your hard disk and then copies only new or changed files—saving time and storage media. The Duplicate function copies any local volume or folder and retains files in Finder™ format.

- Restores an entire hard disk in a single step, even after multiple incremental backups
- Includes compression, encryption, and support for almost every SCSI device ever made
- Accelerated for the Power Macintosh and fully compatible with almost every storage device

Awarded 4½ mice — *MacUser*
Editors' Choice Award — *MacUser*, 1993

**$35 REBATE** on your Retrospect 3.0 purchase.

# Redemption Coupon

## *Here's how to redeem your hot deals!*

Taking advantage of the hot holiday deals inside is easy. Simply stop by your local authorized Apple retailer to purchase your favorite software titles today.

After purchase, complete this form, making sure to correctly indicate the offer code for each product you purchase (see sample below). Return this form, along with your proof(s) of purchase to: Apple Software Rebate Center, P.O. Box 5872, Denver, CO 80217. You will receive your rebate or premium in eight to ten weeks.

**S A M P L E**

Find **offer code number** above title

Offer Code 120

**Where's Waldo?**

**Offer Code Number** _____ _____ _____

_____

**Product Name**

**Offer Code Number** _____ _____ _____

_____

**Product Name**

**Offer Code Number** _____ _____ _____

_____

**Product Name**

**Offer Code Number** _____ _____ _____

_____

**Product Name**

All offers good only in the United States and only for Macintosh versions of software. All offers good for purchases made through Jan. 31, 1996. Offers cannot be combined with any other offer. This form and a copy of the store receipt for the purchase of qualifying software product(s) must accompany all entries. All entries must be postmarked by Feb. 28, 1996. **If you have not received your rebate after ten weeks, call 1 800 681-8843.** Rebate payments made in U.S. Dollars. Apple Computer, Inc., is not responsible for lost or misdirected mail. Void where prohibited. Each software developer is responsible for fulfillment of any and all redemption of offers for its product(s) which result from inclusion in this guide, or participation in this program. All costs associated with redemption of offers (excluding shipping and handling charges, where applicable) are the responsibility of each software developer.

**It's easy!**

1. *Go to any retail store location on or before Jan. 31, 1996*
2. *Purchase any of the products in this guide from any software retailer—there's no limit!*
3. *Complete the product name and offer code on this form for **each** product purchased (feel free to make copies of this form as necessary)*
4. *Attach proof(s) of purchase for each product (enclose copy of sales receipt, circle date and product price)*
5. *Important: please refer to offer page(s) for any additional redemption criteria required by the software manufacturer*
6. *Mail to: Apple Software Rebate Center, P.O. Box 5872, Denver, CO 80217. Must be postmarked by Feb. 28, 1996*

## Your Mailing Information

Name _____
First Last

Street _____

_____

City _____

State _____ ZIP _____

Home ( ) _____ Work ( ) _____
Area Code Area Code

_____
Customer Signature

**AD**

Cut and return, along with proof(s) of purchase, to receive your rebate or premium. Feel free to make photocopies as necessary.

# *Where to purchase your software.*

To take advantage of the special mail-in rebates, premium offers, and special deals inside, purchase your software at *any* software retail store. To help, we've listed a few authorized Apple retailers who carry a wide selection of Macintosh software.

**CompUSA**
1 800 COMPUSA

**Computer City**

**Best Buy**

**Micro Center**

**Future Shop**

**Computer Town**

**Fry's Electronics**

**Rockwell**
**Computer and Software**

**Elek-Tek**

**ComputerWare**

**Sears Brand Central**

**Egghead**
1 800 EGGHEAD

**J&R Computer World**

**Creative Computers**

**Incredible Universe**

**Lechmere**

**Sun Super Saving Centers**

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BY JIM HEID

# Working Smart

## Clearing Hard Drive Clutter

IT ISN'T ALWAYS THE BIG THINGS THAT eat away at your closet space. Sometimes it's the little gimcracks that gather over time, making their way to the back of the closet where they hide in the shadows collecting dust and slowing you down when you need to find something.

This same phenomenon occurs with hard drives. Sure, the Microsoft Words and Adobe PageMakers of the world take their toll on disk space. But so do a variety of small files that accumulate over time. Preferences files, aliases, custom icons—these and other items multiply as you use the Mac, nibbling away at disk space like termites and slowing down tasks such as opening folders and searching for files. And because of the way the Mac allocates space on hard drives, these little files take a bigger bite out of large drives than small ones. For example, the smallest file a Mac can create on a 230MB hard drive is 4K, but on a 1GB hard drive a file can be no smaller than 16K.

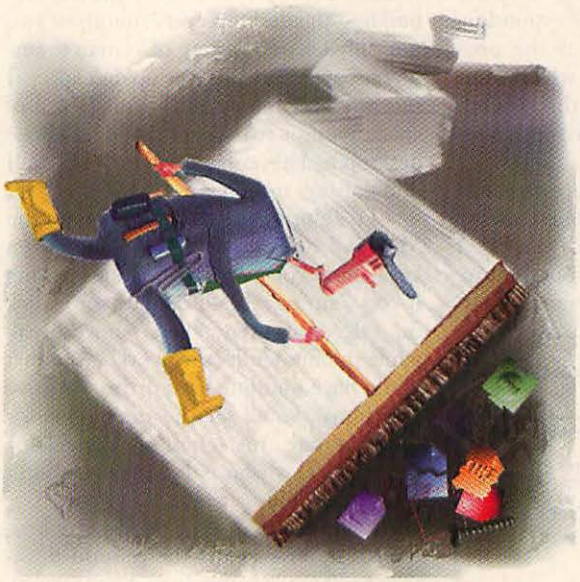
This month's column is a guide to cleaning up your hard drive using a variety of freeware and shareware programs, all of which are available for downloading from the software library on Macworld Online (see *Macworld Online*, elsewhere in this issue, for details on how to access Macworld Online).

### Trash Old Prefs Files

Most programs create preferences files that store operating information, such as the size and position of windows, your custom keyboard and tool palette settings, and your serial number and registration information. These preferences files live in a folder named Preferences, located within the System Folder.

When you delete a program, its preferences file stays behind, wasting disk space and sometimes causing conflicts with a newer version of the program. If you use a lot of software—particularly if you try out programs from sampler CD-ROMs or you play with freeware and shareware—preferences files can multiply like rabbits. A search through my own Preferences folder yielded 345 files using a total of 5.6MB. Most of the files belong to applications I still use, but many are from shareware or demo programs that I'll never double-click on again.

One way to clean out your Preferences folder is by hand—open the folder and trash any preferences files whose programs are long gone. Don't fret if you accidentally trash a preferences file for a program you do still use—all programs I'm aware of create a fresh preferences file if they can't find one, although you may lose your custom settings.



STEVE CAMPBELL

Another way to purge your Preferences folder is with Jim Moore's O-Limpia freeware utility. O-Limpia displays a window listing your preferences files and provides several useful features that can help you determine which files are needed. You can move unused preferences files to the Trash or attempt to locate the application that created them.

### Delete Orphaned Aliases

I can't imagine using the Mac without aliases. The way they provide fast access to items buried within folders or stored on a file server is so convenient that it's no wonder Microsoft "adopted" the idea for Windows 95.

But when you delete the item an alias points to, the Macintosh OS isn't smart enough to delete the item's alias. Instead, the alias hangs around on your hard drive, using up space.

Several outstanding freeware and shareware utilities can round up those orphaned aliases and send them packing. The best shareware alias-management utility is Laurence Harris's $10 Alias Director 3.5.2. Besides enabling you to create aliases that don't have icons (handy for saving desktop real estate), Alias Director provides a Check Aliases command that scans your hard drive in search of unattached aliases. When it finds one, you can reattach the orphan to a different item or you can delete it (see "Alias Masters"). Alias Director also has shortcut keys for creating iconless aliases, putting aliases in the Apple menu, and other tasks.

Another great alias utility is Blue Globe Software's $15 AliasZoo 2.0.5. It lacks Alias Director's battery of shortcuts, but it does have superior alias-management features. AliasZoo searches a hard drive or folder and reports on the aliases it finds. You can delete orphaned aliases by selecting them all and then clicking on a Trash icon.

If you have AppleScript installed, you can use two freeware applets by John Du Bois. Apple Menu Cleaner 1.1 removes orphaned aliases from the Apple Menu Items folder, while Launcher Item Cleaner 1.1 removes them from the Launcher Items folder. Both are bare-bones—you

*continues*

don't get a chance to verify or even examine their deletions, for example—but the price is right.

### Purge Custom Icons

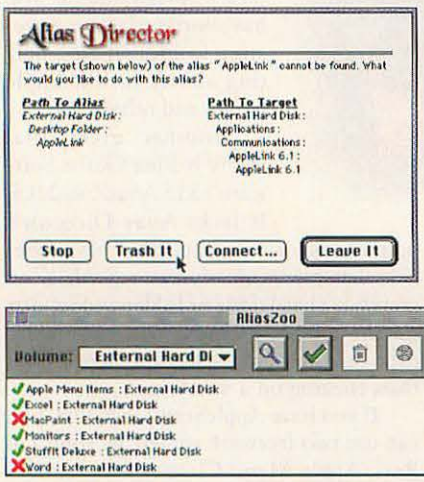
System 7's custom-icon feature is a fun way to dress up disk, folder, and file icons. Many CD-ROM developers, myself included, use custom icons to decorate the folders on our CD-ROMs.

But custom folder icons slow down the Finder when it displays a disk's contents—open a disk containing numerous custom folder icons, and the icons drip onto the screen, one by one. And they take up disk space—each folder icon is stored in a separate, invisible file.

You might think the solution is to delete each folder's custom icon using the Get Info command. Besides being a lot of work, this doesn't address the disk-space issue: when you clear a custom icon, the Finder doesn't delete the invisible file; it simply removes the icon resources from that file.

The real solution is a $5 utility named Folder Icon Cleaner 1.1.3, by Fabrizio Oddone. ("Killing icons is perfectly legal here in Italy," his documentation states.) Folder Icon Cleaner lets you scan a folder or an entire disk and delete all the custom icons and their corresponding invisible files. Even better is the program's Erase Unused option, which annihilates all those empty files that are left over when you remove custom icons using the Finder.

Laurence Harris's $25 shareware utility File Buddy 3.2 can also delete empty icon files and handle many of the other cleanup chores I've mentioned here, including checking the Preferences folder and scanning for orphaned aliases.




**Alias Masters** Two shareware utilities that let you tame your aliases: Alias Director (top) lets you search for and delete unattached aliases or attach them to other files, while AliasZoo (bottom) displays detailed reports on all the aliases on your hard drive. (Aliases that have an *X* next to their names are orphans.)

### MORE TRASH TO SLASH

While you're occupied with clearing away clutter from your hard drive, there is plenty of other useless junk that you probably should round up and haul off to the Trash.

**Unused Printer Drivers** System 7.5's standard installation includes printer drivers for Apple's most common machines. If you don't have a certain printer, remove its driver from the System Folder's Extensions folder. The space savings can be significant: the LaserWriter 300 driver, for example, uses over 300K.

**Help Files** Once you master a program, you might want to trash its online help files. These are usually stored in the application's folder, although you might also find them in the System Folder. In a related vein, the various Apple Guide files that accompany System 7.5 are big space users—collectively, they use over 2MB.

**File Converters** A complete installation of a program may include file-conversion filters that you'll never need. Pare down your converter collection to only those that you actually use. (Hint: They may be located in the application's folder, or in various folders inside the System Folder.)

**Sample, Tutorial, and Template Files** Most programs come with documents that illustrate features, complement tutorials, or serve as boilerplate for your own documents. Look through your application folders and throw out the documents you know you'll never use. You can always reinstall them later.

### Deck Your Desktop

One of the most common pieces of advice you hear in the Macintosh world is to rebuild your Mac's desktop—that invisible database that stores information about a disk's contents. It's good advice. Rebuilding the desktop every month or two not only keeps a variety of system gremlins at bay; it can also free up disk space. I recently reclaimed nearly a megabyte of space from a two-year-old Mac whose desktop had never been rebuilt. (OK, so I don't always take my own advice.)

To rebuild the desktop, restart the Mac and hold down the ⌘ and option keys until you see a dialog box asking if you want to rebuild the desktop. Click on OK, and then take a short break while the Finder does its work. Note that if you have multiple hard drives (or drive partitions), you'll see this dialog box for each volume. Just click on Cancel for those volumes whose desktops you don't want to rebuild.

Note also that some third-party keyboards don't support the rebuild-desktop keyboard command. Fortunately, there are freeware and shareware utilities that can delete the desktop and force the Finder to rebuild it. File Buddy is one. Another is TechTool 1.0.7, a freeware utility created by MicroMat Computer Systems. TechTool is also a superb program for resetting your Mac's parameter RAM (PRAM)—that small, battery-powered area of memory that keeps track of the date and time and other settings when the Mac is off. It's the only utility I know of that can display two secret pieces of information located in the PRAM of every Mac from the IIcx on: the date the Mac was manufactured and the number of hours it has been used. If you want to know your Mac's birthday, TechTool is for you.

For Mac veterans, here's a variation of the desktop-cleaning routine. If you have an older hard drive that you previously used with System 6, you can free up some space on it by deleting the invisible Desktop file. A $15 shareware utility, S. Koren and Com~Link's Kill~Desktop 1.0.0, will do the job, as will any utility that lets you delete invisible files. (Delete only the file named Desktop, not the files named Desktop DB and Desktop DF—these are what System 7 uses instead of the Desktop file.)

### Keep It Clean

I can't vouch for this, but I hear the best way to keep a closet tidy is to avoid cluttering it up to begin with. The best way to maximize your hard drive space is to periodically perform the chores I've outlined here. Not only will you save disk space, but the Finder's Find command will operate faster—as will backup utilities, virus checkers, and other programs that scan the hard drive's contents.

Maybe you can use the time you save to tackle cleaning your closets. ■

**Next month: Mac telephony revisited**

Contributing editor JIM HEID is the author-producer of *Macworld New Complete Mac Handbook*, fourth edition (IDG Books Worldwide, 1995), whose bundled CD-ROM contains many of the utilities described here.

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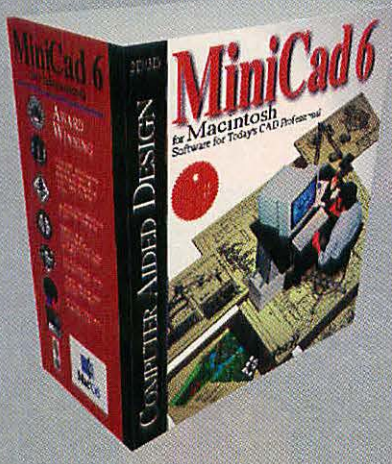
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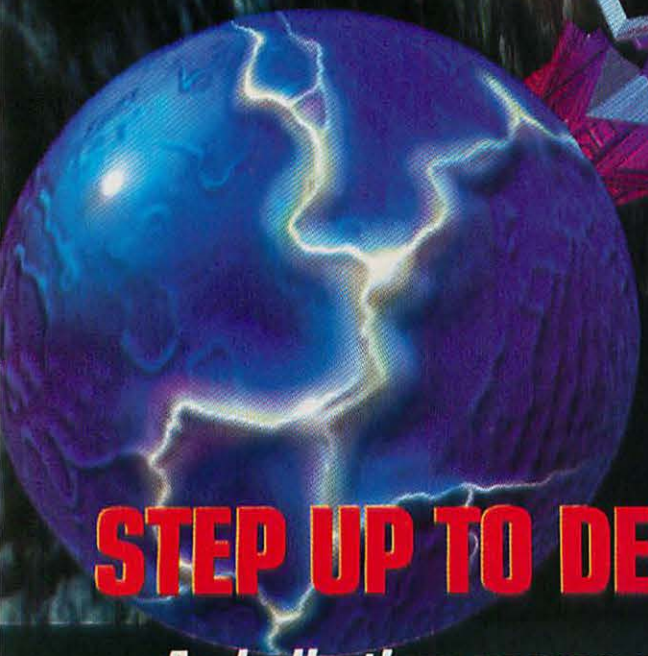
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BY LON POOLE

# Quick Tips

## Tips, Tricks, and Shortcuts

IN INTUIT'S QUICKEN, EVEN AFTER you've closed an account (such as a paid loan or a sold asset), it remains mixed in among the active accounts. You can't delete a closed, inactive account because that would remove all the transactions associated with it, and you might need them if you're audited. Scott Sarama of Odenton, Maryland, has found that slightly altering the name of a closed account can separate it from active accounts. Simply insert the copyright symbol (©, created in most fonts by typing option-G) at the beginning of the account name (see "Orderly Accounts List").

### Save As Gets Lost

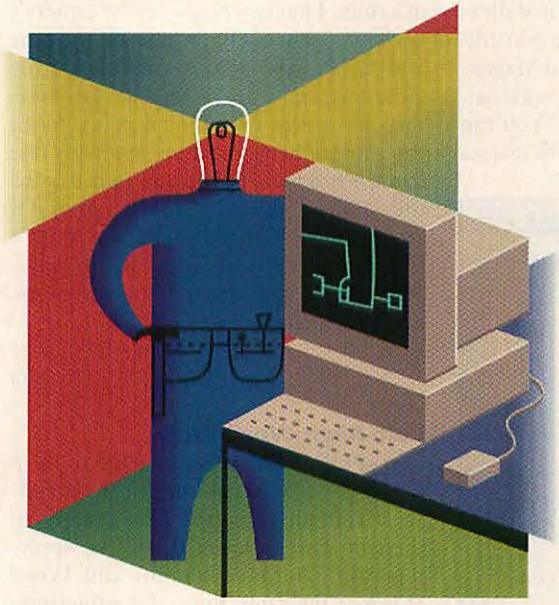
**Q.** I routinely reuse the format and some contents of an existing Microsoft Word, Excel, or other document by opening it and using the Save As command to create a new document. With System 7.1, the Save As dialog box would be preset to the same folder location as the document I just opened. This doesn't always happen with System 7.5, no matter how I set the Documents option of the General Controls control panel. How can I get System 7.5 to preset the folder location like System 7.1 does?

*Norman E. Winter*
*Taegu, South Korea*

**A.** Drag the General Controls control panel out of System 7.5's Control Panels folder (to the desktop or to any other folder) and restart. You get the behavior you want, but you suffer the loss of other features General Controls provides in System 7.5, such as controlling the visibility of the desktop when it's in the background. Actually, developers can have their applications preset the folder location correctly even when General Controls is installed, and some do. For instance, Word 6 always seems to preset the folder location to the same place as the most recently opened document, but Word 5.1 and Excel 4.0 and 5.0X do that only for documents opened with their Open commands (not for documents opened with the Finder).

### GUI Internet

**Q.** I have access to the Internet through my university's dial-up service. When I log on to my account, I'm in a Unix environment—a command-line interface. Is there software I could put on my Mac that will communicate with the university's computer through a graphical interface, so that I can access the Web and its hypertext features?



*Lisa Thompson*
*Arlington, Virginia*

**A.** See if you can get a PPP or SLIP type of dial-up account (ask the server's system administrator). If so, you can install MacTCP (included with System 7.5) and either MacPPP (free; **ftp://ftp.merit.edu/internet.tools/ppp**) or InterSLIP (free; **ftp://ftp.intercon.com**). MacTCP translates the Mac's native network protocol, AppleTalk, to the network protocol used by Unix and the Internet, TCP/IP. You can use MacPPP or InterSLIP to connect by modem to the Unix computer. Ask the Unix system administrator for help in setting up MacTCP and MacPPP or InterSLIP. With that software installed and set up, you can use Netscape Navigator, Mosaic, or another Web browser, as well as other applications with graphical interfaces for accessing Internet services. For a thorough discussion of these topics, I recommend *Internet Starter Kit for Macintosh*, second edition, by Adam Engst (Hayden Books, 1995).

If you can't get a PPP or SLIP account, you can use Netscape Navigator and other MacTCP-based applications with a shell account. Ordinarily you can type only Unix commands with a shell account, but installing The Internet Adapter (TIA) software from Cyberspace Development transforms the shell account into a pseudo SLIP account. You can use Netscape Navigator, Mosaic, and all the other graphical Internet tools, and Cyberspace claims TIA slightly exceeds the speed of an ordinary SLIP connection. There are a few things you can't do with TIA, such as having your computer function as an FTP server, but for the most part they're not things you'd do with a dial-up connection anyway. At a single-user cost of $25, TIA may be the cheapest way for

*continues*

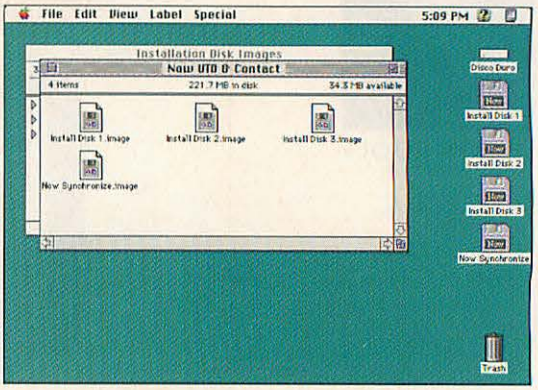
individuals to get practically full Internet access, since companies that provide Internet accounts generally price shell accounts lower than PPP and SLIP accounts. For details, send blank E-mail to **tia-info@marketplace.com** or call Soft-Aware, an authorized TIA dealer, at 310/305-0275.

### Floppies on a Hard Drive

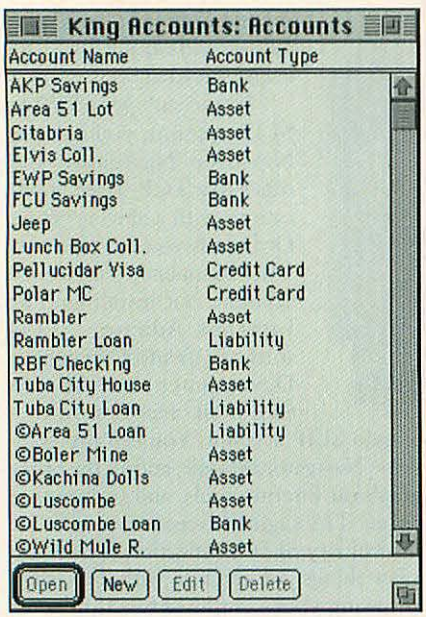
**Q** There was a lot of discussion on my local Macintosh user group's bulletin board when I asked if installation disks could be copied to a removable hard drive and used from there, without copying back to floppy disks. One suggestion was to simply copy all of a software package's installation disks (by dragging their icons one by one) to a folder on the hard drive. Another suggestion was to use the ShrinkWrap utility to create an image of each floppy as a file on the hard drive. Are both of these viable methods, and does one have an advantage over the other? Is there a better method?

*Dave Peck*
*Rosemount, Minnesota*

**A** Although many software installers will work from folders created by copying floppies to a hard drive (as long as all the folders for a software package are in the same folder), some installers work only from floppies. The ShrinkWrap freeware program by Chad Magendanz stores floppy disk images, optionally compressed, on a hard drive. You can mount any number of floppy disk images on the desktop concurrently (see "Umpteen Floppies"). You have the option of keeping the mounted images in RAM for lightning-fast RAM-disk speed. If you select that option, the amount of RAM limits the number of installed disk images (virtual memory and RAM Doubler don't count). Otherwise each mounted image uses only 1K of RAM, and the number of mounted disk images is limited by the amount of hard drive space. Other utilities can create disk images and mount them on the desktop, but ShrinkWrap is the most versatile. It's available from Macworld Online's Internet Web site and AOL and eWorld forums.




**Umpteen Floppies** With the free utility ShrinkWrap 1.4.2, you can store images of floppy disks on a hard drive, and you can mount the images as if they were floppy disks, each inserted in its own floppy drive.




**Orderly Accounts List** To signify that an account is closed in Quicken, prefix its name with a copyright symbol (©), which moves it to the bottom of the list. You can then size the accounts-list window to view either all accounts or only active ones.

### Focusing QuickTake Close-ups

**TIP** I love my Apple QuickTake 150 digital camera. The close-up lens is great, but I had some difficulty judging the optimum-focus distance of 1 foot, plus or minus 2 inches. The range-finder triangles superimposed on the close-up lens for estimating the distance to the subject didn't help much. So with the aid of a ruler, I put two marks on the camera's neck strap (supplied) to indicate the near and far limits of acceptable focus for close-ups, and I use those marks to measure the camera-to-subject distance. With the camera held up to my eye with one hand, I hold the neck strap taut toward the subject with the other hand. Of course, just before I take the shot I remove the strap from the field of view. Since the strap is attached to the camera, it's always handy.

*Stan Schwartz*
*Montreal, Quebec, Canada*

### Left-Align Word Wrap

**TIP** If you have ever wanted to wrap words across multiple spreadsheet columns, you may have discovered that you can do this in Excel 5 by applying Align Across Columns and Word Wrap at the same time. But sometimes this solution does not look as good as you might hope. For example, it may look great with titles but not with a bullet-point list (see "Wrapped Left"). You could use a text box to left-align the word-wrapped text, but you might have to adjust the box every time you change the text. The following procedure automatically adjusts the left-aligned, word-wrapped text if you change it.

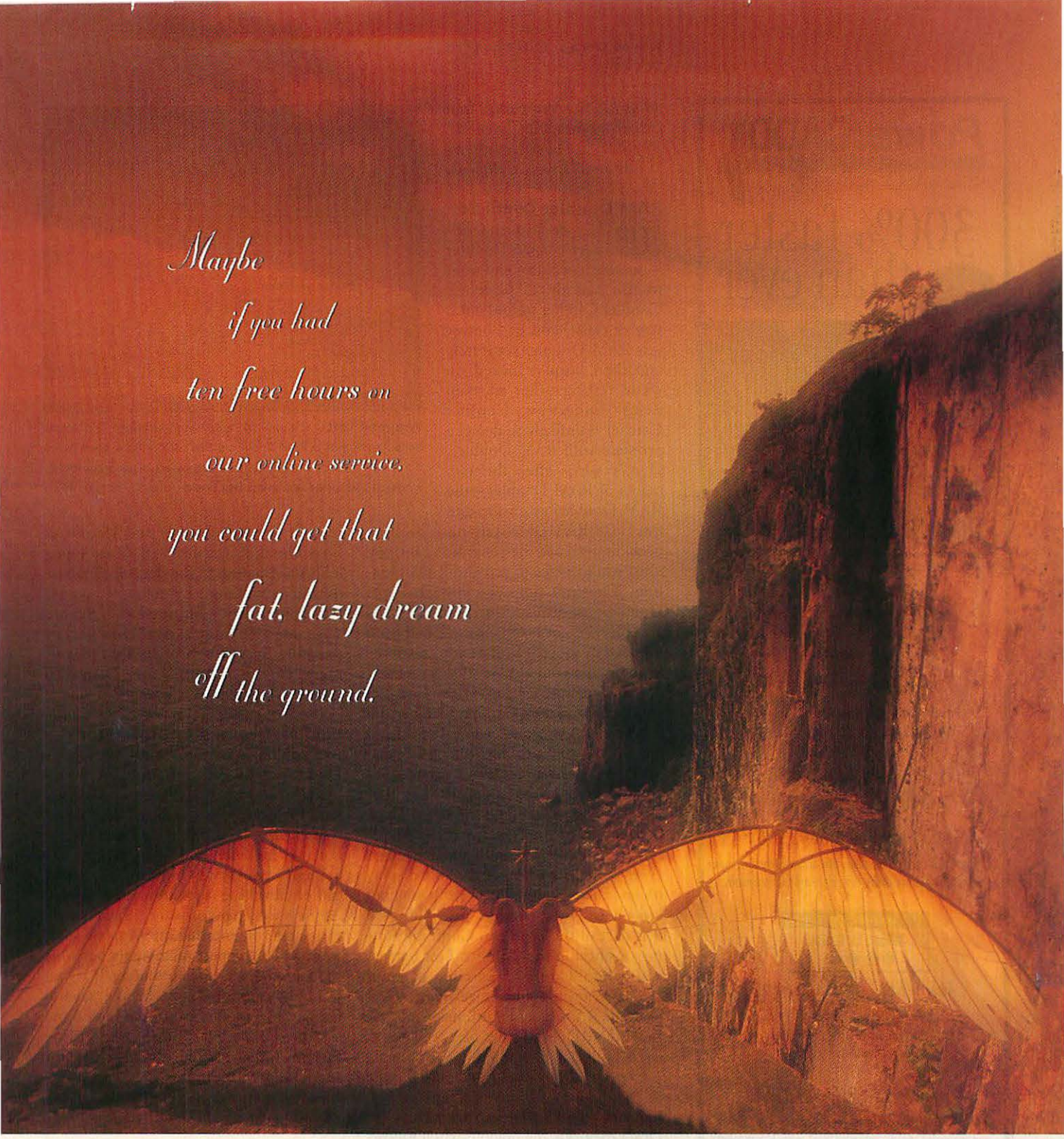
1. Create a text box for each bullet point (paragraph) you want to format: select the text-box tool, hold down the ⌘ key, and drag across the range of cells you want the bullet point to span. Pressing ⌘ forces the text box to fit the cell boundaries exactly. Set the text boxes to have no borders by selecting the boxes, choosing Object from the Format menu, selecting the Patterns tab, and setting the Border option to None. In "Wrapped Left," text boxes span B31:E31, B33:E33, and B35:E35.

2. Enter the text for each text box in a blank cell on the same row as the box but conveniently out of the way. Then wrap the text across the same number of columns as the text box by selecting the cell ranges, choosing Cells from the Format menu, selecting the Alignment tab, and setting the Horizontal and Vertical options to Center Across Selection and Wrap Text. Also, make sure the column widths of those cells are the same as the column widths spanned by the text boxes—use the Widths command in the Columns submenu of the Format menu. In "Wrapped Left," the text is entered in cells G31, G33, and G35, and it is wrapped across the cell ranges G31:J31, G33:J33, and G35:J35. Columns G:J have the same widths as columns B:E.

3. Select each text box in turn and enter a formula that gives it the value of the cell where you typed the text it should contain. In "Wrapped Left," the text box at cell B31 contains the formula **=G31**, the text box at B33 contains the formula **=G33**, and the text box at B35 contains **=G35**.

4. Type a bullet in the blank cell to the left of each text box. Set those cells for top right alignment by selecting them, choosing Cells from the Format menu, selecting the Alignment tab, and setting the Horizontal and Vertical options to Right and Top. In "Wrapped Left," cells A31, A33, and A35 contain bullets created by typing the lowercase

*continues*




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letter *l* in the Wingdings font (which comes with Excel 5).

*Shane Devenshire*
*Walnut Creek, California*

### RAM Doubler Conflicts

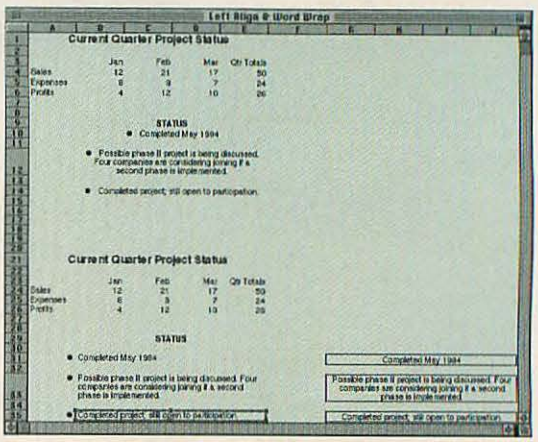
**TIP** If you suspect Connectix RAM Doubler is causing a problem and want to use Casady & Greene's Conflict Catcher to find out if you're right, you had better test RAM Doubler separately and then keep it locked on while testing other start-up items. Otherwise, Conflict Catcher is unlikely to detect a problem with RAM Doubler. Here's why: After the two pieces of RAM Doubler—the RAM Doubler extension and the Load RAMDblr start-up file—have been disabled and then enabled again, you must restart twice to activate RAM Doubler. The first time you restart, RAM Doubler just displays the message "RAM Doubler did not load because it had been disabled or moved. Restart your computer to double your RAM." If this message occurs during testing with Conflict Catcher, you know Conflict Catcher did not keep RAM Doubler enabled during consecutive restarts, with the result that RAM Doubler was not actually tested.

To test RAM Doubler, use Conflict Catcher to turn off only the RAM Doubler extension and the Load RAMDblr start-up file (which Conflict Catcher lists even though the Finder doesn't display it), and then restart. If your problem goes away with RAM Doubler disabled, then it is part of the problem. Continue testing by clicking the Conflict Test button, and when Conflict Catcher displays "Click on any files that must be on," select both the RAM Doubler extension and the Load RAMDblr start-up file.

*Michael Fu*
*Silver Spring, Maryland*

### Keeping Get Info Comments

Don't overlook the obvious when following my advice in September's *Quick Tips* to rebuild the desktop with extensions off. If you have installed the freeware extension CommentKeeper to save your Get Info comments from oblivion during rebuilding, Tom Turcich of Houston notes, you should be sure to leave it turned on when you rebuild! Don't restart with the shift key down prior to rebuilding or you'll turn off CommentKeeper along with all other extensions. Instead use Extensions Manager, Conflict Catcher, or a similar utility as I described in September to turn off other extensions but not CommentKeeper and Macintosh Easy Open, if it is installed. (Easy Open adds information to the desktop database during rebuilding.) Likewise, if you use automatic disk-compression software such as Symantec's AutoDoubler or Aladdin System's StuffIt SpaceSaver, make sure it is turned on when you rebuild the desktop.




**Wrapped Left** It's easy to center word-wrapped text across multiple columns in Excel 5, but it doesn't always look good (rows 9 through 14). You can get better results by left-aligning the word-wrapped text inside borderless text boxes (rows 31 through 35).

### Finding Desktop PrintMonitor

Are you having trouble finding Apple's Desktop PrintMonitor software, which installs printer icons on the desktop (as described in October's *Quick Tips*)? At this writing it was not available separately, but it is included with the LaserWriter 8.3 and StyleWriter 2400 software. You can obtain those software packages from Apple's online software libraries on eWorld or the Internet (**ftp://ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Printing/**). If you don't have online access, take several formatted disks to an Apple dealer and ask the dealer to download the software for you (there may be a charge for this service). A related note: Desktop PrintMonitor requires System 7.1.2 or later, according to reader Dennis T. Cheung.

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips*, Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld*. Due to the high volume of mail received, we're unable to provide personal responses. m

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld System 7.5 Bible*, third edition (IDG Books Worldwide, 1994).

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EDITED BY ELIZABETH DOUGHERTY

# Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

## Open Transport Still Falls Short

APPLE'S OPEN TRANSPORT NETworking architecture promises to completely overhaul the way your Mac interacts with your network, but an incomplete implementation and bugs have delayed the realization of that promise.

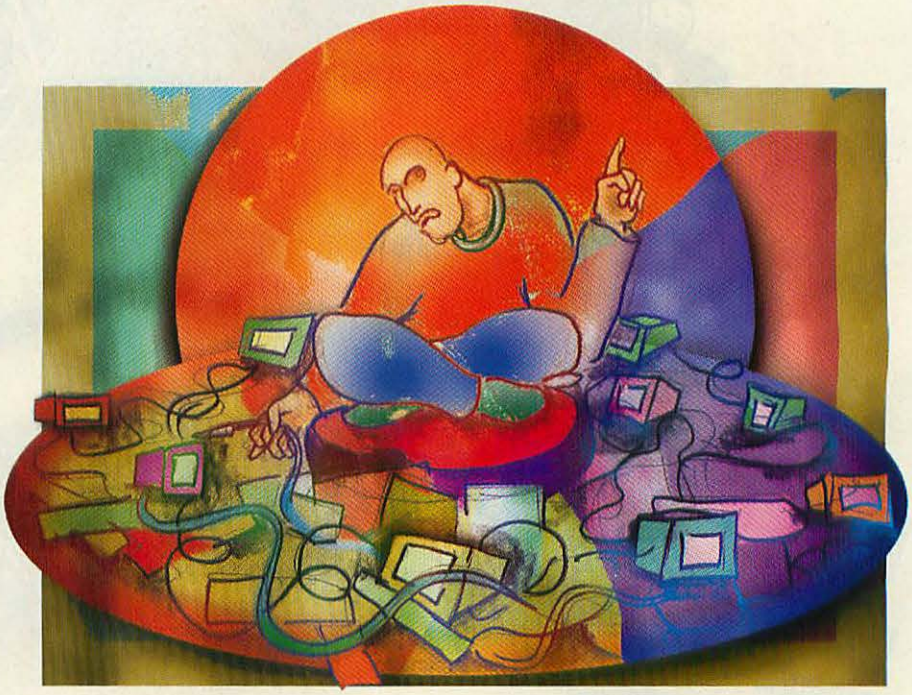
The positives: Open Transport will provide speedier performance, a uniform user interface for different network protocols, more efficient programming of networking capabilities into the software you use, and backward compatibility with existing networking applications. (See "Open Transport Moves Along," *Networks* news, March 1995.)

The negatives: The first versions of Open Transport, which ship with Apple's PCI Power Macs, have stumbled badly in offering the promised seamless networking capability. These versions have several bugs that have affected many users, especially those who need TCP/IP connectivity, such as PPP and SLIP hookups. Many of these problems were handled in the three bug fixes—1.01, 1.06, and 1.07—that Apple delivered in the first 52 days after Open Transport began shipping (on June 19) with the Power Mac 9500 and subsequent PCI Power Macs. Despite these updates, Open Transport still doesn't support the increased speed of 100-Mbps Ethernet.

Most of the problems reported by users—about 70 percent, according to Gary Hornbuckle, Apple's product line manager for Mac OS communications—are caused by two sets of problems.

- Open Transport is not consistently backwardly compatible with existing PPP and SLIP programs; this problem mainly affects Internet users.

In addition to installing the 1.07 bug fix, users need to get the latest versions of the SLIP and PPP software: Apple has validated version 2.1.3SD of the MacPPP shareware, and version 3.0 of Hyde Park Software's MacSLIP (512/472-0744), which also offers PPP support. Even with those versions, one big problem remains: after each connection has ended, you must hang up the modem, quit the browser or other SLIP or PPP application, and restart your Mac before you can make another connection.



JOHN RITTER

- In Eudora and sometimes in Claris Emailer, very small messages don't transmit reliably.

Another problem is not caused by Open Transport but by the Apple printer drivers: systems can crash during printing. The bug in the drivers has long been known to Apple, but it never caused a problem until Open Transport shipped with the 7500. Apple will offer a printer driver fix, most likely in the form of an INIT, later this fall.

Apple is tracking down other problems. These include the inability to use Apple's telecom software with a GeoPort interface pod while a LocalTalk device (like a printer) is active and the inability to use LocalTalk while using Apple Remote Access.

Among the features promised for Open Transport but still undelivered are the ability to have AppleTalk load and unload on the fly, such as when using the printer, and to conserve RAM usage and improve overall performance (AppleTalk can slow down other software, even when it's not being used).

To get Apple's Open Transport fixes, call 800/769-2775, ext. 5617, or download the files from Apple's Web site (**http ://www.apple.com**) or from CompuServe's Apple forum.

Apple is hoping to fix the most important remaining bugs and omissions in its

first general release of Open Transport, 1.1, which will support both Power Macs and 680X0 models, later this year.

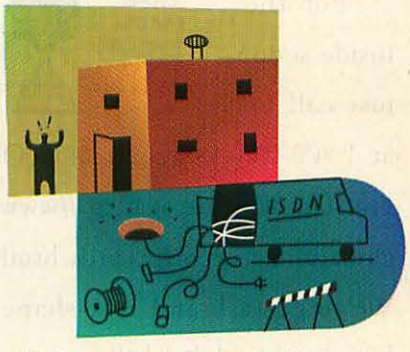
This version will also be available, free, for users with MacTCP customer-maintenance agreements and for owners of PCI Power Macs. It will also be incorporated into future system updates.

The shift from Apple's original networking architecture to an entirely new one (Open Transport) with backward compatibility can't help but result in some painful transitions. Apple expected some, but officials are embarrassed by some others they now believe they could have prevented (such as the E-mail unreliability and the SLIP/PPP incompatibility). Still, Apple expects that the Open Transport–savvy programs that several companies plan to ship based on version 1.1 will salve users' pain with much higher performance networking and more flexible connectivity options.—ELIZABETH DOUGHERTY AND GENE STEINBERG

# Getting the ISDN Connection

AS THE INTERNET, AND ESPECIALLY the World Wide Web, becomes more important to Macintosh users, even the fastest analog modems can seem too slow for comfort. ISDN, the high-speed digital phone service, offers you two data channels, called B channels, each running at 64 Kbps. But hooking up an ISDN line is much more complicated than setting up a regular phone line. Here are some tips to get you connected smoothly.

- Ask your local phone company if ISDN is available for your location; ISDN coverage does not extend to all areas. Next, ask what kind of digital switch the company uses: different switches have different capabilities, and your local switch will determine what ISDN services, and to some extent, what ISDN equipment, you can install.
- Question the telephone company's rep closely regarding costs; they vary widely across the United States. You can often get much lower installation costs if you convert an existing line to ISDN.
- The ISDN equipment you buy




DOUG ROSS

will determine the technical settings you'll need to order ISDN service. Contact the equipment maker for correct settings before you order your ISDN line.

- If you're using ISDN mainly for Internet connectivity, consider buying a connection package from a local Internet service provider (ISP).
- Two Web sites offer the best information about ISDN: **http://alumni.caltech.edu/~dank/isdn/** and **http://www.pacbell.com/isdn/book/toc.html**. Also check out the ISDN newsgroup at **comp.dcom.isdn**.—TOM NEGRINO

## ISDN IN THE USA




- **PACIFIC BELL,** 800/472-4736 service center, 800/995-0346 automated ISDN—CA. Installation $35; monthly $25; usage $0.01/min.; coverage 99%.
- **NEVADA BELL,** 702/333-4811 small business, 702/688-7100 large business—NV. Installation $227; monthly $80; usage $0; coverage 100%.
- **US WEST,** 800/246-5226—AZ, CO, MN, OR, SD, WA. Installation $65–$110; monthly $55–$84; usage $0 to $0.10/min.; coverage 7%–93%.
- **US WEST**—Due in IA, ID, NM, UT by January 1996; MT, ND, NE, WY by July 1996.
- **SOUTHWESTERN BELL,** 800/792-4736—MO, TX. Installation $452–$578; monthly $57; usage $0; coverage unknown.
- **SOUTHWESTERN BELL**—Due in AR, OK by 1997.
- **AMERITECH,** 800/832-6328—IL, IN, MI, OH, WI. Installation $133–$147; monthly $32–$100; usage $0 to $0.02/min.; coverage 80%.
- **BELLSOUTH,** 800/428-4736—AL, FL, GA, KY, LA, MS, NC, SC, TN. Installation $24–$267; monthly $33–$80; usage $0; coverage 80%.
- **BELL ATLANTIC,** 800/570-4736—DC, DE, MD, NJ, PA, VA, WV. Installation $135; monthly $39; usage $0.02/min.; coverage 100%.
- **NYNEX,** 800/438-4736—MA, NY, ME, RI, VT. Installation $33–$225; monthly $16–$28; usage $0 to $0.16/min.; coverage 8%–90%.
- **SNET (SOUTHERN NEW ENGLAND TELEPHONE),** 800/430-4736—CT. Installation $245; monthly $33; usage $0.035/min.; coverage 100%
- **GTE,** 808/643-4411—HI. Installation $76; monthly $66; usage $0.01/min.; coverage 24%.
- **ISDN NOT AVAILABLE:** AK, KS.

SOURCE: BELLCORE

## NEWS FLASH

**Apple Drops Power Mac NetWare** After several years of promises and delays, Apple has ended its development of NetWare server software for the Power Mac. (Although NetWare is a Novell technology, the Power Mac server was Apple's product-development effort.) Instead, Apple and Novell will work on developing NetWare for the Converged Hardware Reference Platform design due in late 1996. Apple said as recently as early September 1995 that Power Mac NetWare server software—originally promised for mid-1994—would be available in early 1996 (see "NetWare 4 for PowerPC," *Networks* news, November 1995). But Apple changed its strategy a few weeks later.

According to Novell, the NetWare server for CHRP systems should be available in 1997. However, the companies have not yet agreed on who would do what portion of the NetWare for CHRP development. Novell believes it makes the most sense for Novell to focus on the NetWare software interface and for the CHRP partners—Apple, IBM, and Motorola—to focus on the drivers and low-level software needed to make NetWare run on the various CHRP operating systems, which include the Mac OS, Windows NT, Unix, and OS/2.

Meanwhile, Novell plans to ship, by the end of 1995, a new Mac NetWare client, which will for the first time provide full NetWare Core Protocol (IPX/SPX) services for Macs on a NetWare network. One IPX-native service new to the Mac is NetWare Directory Services. Novell plans to continue Mac client development, regardless of Apple's eventual NetWare server development; for example, Novell and Apple expect to tightly couple the NetWare client with the Copland Mac OS, which should ship in late 1996 or early 1997. Apple has decided to stop pursuing efforts to make the Mac a general-purpose server, as the NetWare server effort was intended to do. Instead, it will focus on specific markets, such as its Internet server bundle.

—ELIZABETH DOUGHERTY



# Our inny just became an outy.

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BY CARY LU

# PowerBook Notes

## The New PowerBooks, Part 2

LAST MONTH I COVERED THE NEW PowerBooks' expansion bay, motherboard, and video connector, plus upgrades for older PowerBooks; this month I focus on power sources, PC Cards, and the Duos. Unless otherwise noted, references to the 5300 series also apply to the 190 series.

### Power Sources

The 5300 comes with lithium-ion (LiIon) batteries, and the 190 comes with nickel–metal-hydride (NiMH) batteries; the two types are interchangeable. The PowerBook can sense which type of battery is installed and adjust the charging circuit appropriately. These are the first laptops to use Sony's new high-capacity lithium cells, which let Apple's LiIon batteries store 36 watt-hours, compared with 25.5 watt-hours for the NiMH battery (and 17 watt-hours for the 500 series' NiMH batteries). What's more, the LiIon batteries have excellent lifetime performance, delivering 90 percent of their rated capacity even after 1500 recharges, and they hold their charges much better than NiMH or NiCd. At press time, Apple had recalled 5300's because their LiIon batteries posed a fire hazard. For details, see *News,* in this issue.

The LiIon batteries have a four-LED charge-status display; the NiMH batteries lack the display. The 190/5300 batteries are not interchangeable with those of any other PowerBooks.

The 190/5300 batteries operate similarly to the Duo batteries, with a simple processor built into each battery to monitor charging and discharging. This is a step backward from the more sophisticated—but trouble-prone—monitoring circuitry built into the 500-series batteries. Fortunately, the 190/5300 batteries—unlike the Duo batteries—have a robust electrical connector.

Apple had planned to offer as a replacement battery only its expensive LiIon model, even for the 190, but says it will provide information enabling independent companies to produce batteries for the 5300. BTI (213/728-7874, 800/982-8284) is the first to announce such batteries, which will use NiMH cells. Most independently produced batteries will contain NiMH cells, since LiIon batteries are available only to very large companies today.

The 5300 series has three power inputs—in the battery bay; through the AC adapter; and in the expansion bay,



which can accept a second battery. BTI has announced an expansion-bay battery using NiMH cells. But an expansion-bay battery will not be interchangeable with the main battery and must come with its own specially designed AC adapter/charger, because the charging circuit built into the 5300 series connects only to the main battery. The PowerBook will deplete the expansion-bay battery first and then switch over to the main battery. BTI's expansion-bay battery uses a small external charger, which in turn needs an AC adapter.

Newer Technology (316/685-4904, 800/678-3726) and VST Power Systems (508/287-4600) plan to offer AC power adapters that fit into the expansion bay, eliminating the need to carry a separate adapter. Both will also operate on DC power from car batteries (input voltage range will be 11 to 30 volts DC). Both companies' adapters can also be used externally just like Apple's power adapter, leaving the expansion bay free. VST plans to make an AC-only version as well.

VST offers an external battery charger that charges two 190/5300-series batteries at a time; it uses Apple's AC power adapter or VST's PowerAdapter.

### Batteries for Earlier PowerBooks

Elsewhere on the battery front, Absolute Battery (908/534-1560, 800/829-8294) has become the first independent supplier of batteries for the 500-series PowerBooks. Absolute says that it reverse-engineered Apple's complex circuitry for the NiMH batteries, since Apple declined to provide technical specifications for 500-series batteries. Absolute is *joining* BTI as a supplier of Duo batteries. (If you buy a third-party NiMH battery, get return privileges and test it immediately.) At press time, Absolute had shown prototypes but had not begun shipping batteries.

### PC Cards for PowerBooks

The new 5300 and 190 series PowerBooks are the first to have a built-in slot for a PC Card (formerly PCMCIA), an improvement over the 500-series PowerBooks, which require an adapter in the left-side battery slot to accept a PC Card.

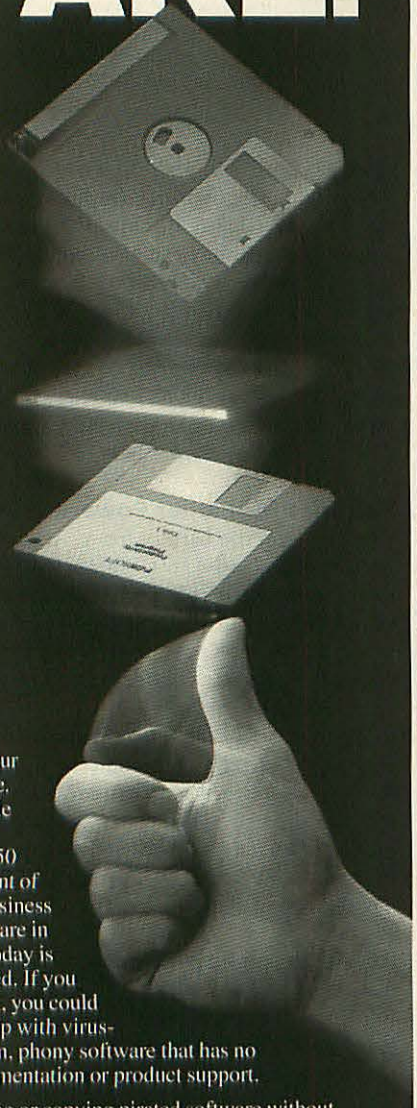
PC Cards have been common on Windows computers for several years, where many users complain about compatibility problems; Windows magazines that test an assortment of PC Cards typically find that only about half work with any given Windows laptop. You should always check for compatibility before buying any PC Card for a PowerBook, and if necessary, get a software driver. PC Cards can serve the following functions:

- **RAM Card as a Disk Drive** The PC Card format was originally designed to add random access memory. RAM

*continues*

PHOTOGRAPH BY MARK JOHANN; SCREEN IMAGE BY GARRY GAY/IMAGE BANK

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cards come in three main types: static RAM cards designed to extend a computer's main memory, such as the memory cards for the Newton (which won't work with a PowerBook); static RAM cards configured as disk drives; and flash RAM cards configured as disk drives. The latter two types will work on a PowerBook.

Static RAM or flash RAM cards configured as disk drives are usually called ATA cards. Apple includes an ATA driver in ROM. Static RAM is much faster than flash RAM, but it costs more and for now the highest-capacity is only 4MB, selling for about $700. Flash RAM is still faster than a hard drive; a 40MB model, the highest capacity currently available in the Type II PC Card size, sells for about $1300. SanDisk (408/562-0500) has a 175MB flash RAM card in the thick, Type III PC Card size for about $3600.

• **Hard Drive** Apple's ATA driver will also work with a hard drive. The market for PC Card hard drives, the thick Type III cards, has not taken off, so several drive makers have stopped producing them. Although PC Card drive capacities are usually no more than 200MB, a 700MB card should be available soon. Prices are considerably higher than for the 2.5-inch drives that are built into the PowerBook or fit in the expansion bay. SyQuest has been promising a miniature 80MB removable-cartridge drive on a PC Card for over a year.

• **Modem** Apple also supplies a modem driver that it says is compatible with most PC Card modems. The main exceptions are those modems with voice processing features, which require their own Mac driver software. Make sure the modem includes Mac fax software.

• **Network Adapter** Many companies make network adapters on a PC Card—most commonly for 10BaseT Ethernet, but a few support Token Ring. Network PC Cards work on the 190/5300 PowerBooks but not in the PC Card cage for the 500 series (which have built-in Ethernet). Several cards combine a modem and Ethernet functions.

• **GPS** The Global Positioning System cards combine a small GPS satellite receiver that connects to mapping software to display your location. Although no current GPS PC Cards come with Mac software, some GPS receivers that connect via the serial port include Mac software. Because of power-supply considerations and the frequent need to mount the GPS antenna away from the computer (outside a boat cabin, for example), a PC Card version may not be ideal.

• **Sound and SCSI** The many sound cards produced for Windows laptops are incompatible with PowerBooks, which have built-in sound. A few CD-ROM drives come with a PC Card interface that includes sound-card functions; such drives will not work with PowerBooks. Similarly, SCSI cards will not work with PowerBooks, which already have a SCSI port.

• **Video Capture** Quadrant (610/964-7600) makes a $399 PC Card with a Mac driver that has connectors for composite video (RCA phono jack) and S-Video and captures video at 15 frames per second (fps) at 320 by 240 pixels, single frames at 640 by 480 pixels. The PC Card interface is not fast enough to support video capture at 30 fps, 640 by 480 pixels. The cards that operate at this rate for certain Toshiba laptops by Nogatech do so by breaking the PC Card rules and writing directly to hardware. Similarly, NEC's TV tuner card breaks the rules. PowerBooks accept only cards that follow the rules.

The video-input bottleneck should be broken by CardBus; this updated version of the PC Card is expected sometime in 1996 and should work with future PowerBooks. CardBus incorporates features of the PCI bus, which is found in both Pentiums and the latest desktop Macs.

Video capture is also possible through the video connector inside the PowerBook 5300; this connector eliminates the bottlenecks of PC Cards. But it would be hard to design a video-capture board small enough to fit in the limited space available, which is about half that available for a PC Card.

## Duo Accessories

Although Apple will continue to sell the Duo MiniDock and full-size Duo Dock, Newer Technology has taken the initiative in producing docks. Newer's docks come in two sizes. MicroDocks provide an ADB port and one of three major functions: SCSI, color video output, or 10BaseT Ethernet. The larger UltraDocks offer a combination of functions, including a connector for Newer's PC Card Drive, a PC Card holder that accepts the usual two Type II or one Type III cards and plugs into a Newer Dock. The PC Card Drive can also plug into a NuBus and PCI card in desktop Macs.

Newer also supplies an external floppy drive for Duos and the PowerBook 100. As a result of what was essentially a clerical error, the Apple drive has not been available for some months; someone forgot to tell Sony to keep the drive in production. m

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column.

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"Click, Click,"
"Pull down menu,"
"Select menu item,"
"Go to submenu,"
"Type in values,"
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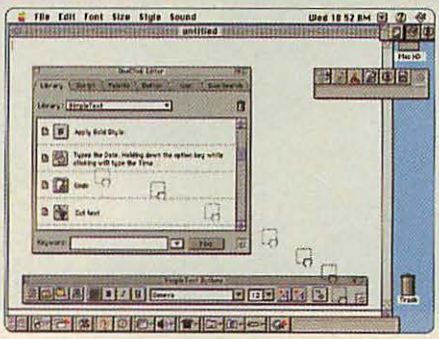
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BY DAVID POGUE

# The Desktop Christmas '95

*This year's choice: cheap, cheery under-tree tchotchkes*

THERE'S A SHORTAGE OF THE new PowerBooks. Apple's reorganizing its corporate structure again. Wall Street predicts Apple's imminent demise. These are all, of course, predictable events, perennial as peonies, and they can mean only one thing: it's holiday time again.

Naturally, I wouldn't miss my annual opportunity to suggest a few items that your Mac-loving friends, relatives, and coworkers would be delighted to find under the Christmas tree, menorah, or Buddha. As in the past seven years, the rules are simple: nothing over $50, and nothing cheesy, buggy, or predictable.

### Zonkers 1.0

Much is being made of the fact that the upcoming Mac Operating System, code-named Copland, will let you colorize and customize the interface. Want watercolor windows? Striped scroll bars? Mauve menus? It's yours for the clicking.

Utility hounds, however, scoff at such pretentious advance hype. "Shoot," they argue, "we've been able to interior-decorate our Macs for years! That's what the program called ClickChange is for. In fact, if it didn't have a reputation for bugginess, we'd be using it at this very moment!"

Fortunately, this most obvious of Mac gift items—the power to wreak your own personal havoc with the look and feel of the Macintosh interface—has been licensed, cleaned up, and gussied up by Nova Development (818/591-9600, 800/395-6682). Under the new name of Zonkers, the fun of dressing up your cursors, menus, scroll bars, windows, buttons, desktop patterns—and now, even icons—no longer comes with a stability penalty. And hey—at $49.95 either on floppy (2000 choices of colors and styles) or CD-ROM (5000 choices), you can afford to stuff a copy into your *own* stocking.

### Mouse Trap Mouse Holder

I've never exactly understood the purpose of mouse holders, those strange gray plastic pockets that attach to the side of your monitor, where you can lodge the mouse between work sessions. Why on earth was this thing invented, anyway? Maybe it was created to keep the mouse high and dry in some flood-prone region. Maybe a loose mouse was too tempting to some inventor's cat. Or maybe it was designed to force some mouse-dependent Macintosh user to use keyboard equivalents more often.

Anyway, if you know some flood-, cat-, or mouse-prone person who's a potential mouse-holder recipient, give this one ($10, Computer Expressions; call 215/487-7700 to find out where you can buy it). It looks exactly like a mouse trap, complete with wood base and wire spring; the visual joke is irresistible. What Mac setup couldn't use a break from light gray plastic, anyway?



Speaking of cheap-but-fun, Computer Expressions also makes a neat desk clock with an actual CD-ROM as its face. If you need gifts for your clients, say, the company can make a bunch of clocks out of *your* CD-ROM design. (Call for pricing.)

### Mouse House

While we're discussing mouse storage, here's someplace else you can put the mouse: into one of five make-it-yourself mouse houses. They come in the form of a supercute paperback book with colorful, die-cut tagboard pages (Penguin USA, 212/366-2000). Pull the pieces apart, insert tab A into slot B, and so on, and you've got yourself a whimsical little Taj Mahal, White House, or other famous residence for your mouse during its off hours. True, this $9.95 booklet probably isn't the right gift for your CEO, but recipients under age 11 will probably find it an engaging and unusual holiday construction project.

### Self-Stick Holiday Gift Labels and Package Stickers

Whatever you wind up giving this season, you must remember: You Are Macintosh. Don't betray the rest of the cult by simply writing the address onto the gift with a Magic Marker. Instead, use your hard-earned talent to *desktop publish* this year's gift labels and package address stickers. Avery and Hallmark have made doing so practically idiot-proof, both technically and artistically: they make sheets of laser-ready, self-stick labels with festive, colorful holiday designs around the borders ($2.95 for a set of 80 labels in one design; available from most office-supply stores). It's up to you to format your labels on screen (using the standard Avery label templates in, for example, FileMaker, Word, or ClarisWorks); then you type in the text you want and let your laser printer do the rest.

### Mouse Arm

Trust me on this: nothing whips up your interest in computer ergonomics more than feeling a little pain yourself. During my own recent round of wrecked-wrist syndrome, I discovered a fascinating chair at—of all places—a hand-surgery convention. It had a little area for the mouse attached to the arm of the chair, so that your mousing could take place on the

*continues*

TROY VISS

same plane as your arm and elbow. The argument was that the way most people mouse—with the wrist elevated above the elbow level—is unnatural and, in the long term, uncomfortable. If the company had wanted something saner than $1800 for the chair, I might have considered one.

Fortunately, for a whole lot less than that you can now acquire something very similar ($42.95; Ring King, 319/263-8144). The Mouse Arm is a rigid-backed, foam-rubber–covered affair that straps right onto the arm of your chair. The way I see it, if it helps prevent wrist problems, great—in the meantime, it's simply a comfortable way to mouse. And besides, the Mouse Arm is enough to earn you gift-giving points for its uniqueness quotient alone.

### Adventure Pack

If you read the same computer magazines I do, you may recall this startling statistic: nearly half of all CD-ROM owners never buy another disc beyond the handful that came with their drive. Personally, I think price may be a barrier: I find it tough to cough up $99 for a piece of plastic that cost the publisher 50 cents.

Fortunately, some loopholes in the pricing structure have recently revealed themselves; CD-ROM companies have begun packaging *ten* of those formerly high-priced CD-ROM discs into special inventory-clearing bundles—for almost irresponsibly low prices. For example, for $49 Wayzata Technology (218/326-0597) offers a ten-pack called Adventure Pack; it includes the clever solve-the-mystery disc Who Killed Sam Rupert, an almanac, 125 fonts, 300 EPS clip-art images, and Internet software. Similarly, Treasure Pack II (also $49) comes with searchable discs of Newsbytes tech news and the *Washington Times*, 125 more fonts, clip art, a disc of 1000 shareware games, and so on.

You may have noticed that I named only a few items in each collection. That's because the rest, as is typical in such products, are instantly forgettable "what-*is*-this?" filler titles. Nonetheless, if your recipients are still hobbling along with their original CD-ROM encyclopedia and Myst, this collection should be an instant hit. Nobody needs to know just how little you spent.

### Mad Mats

If you're a longtime reader of this column, you may well remember my disdain for mouse pads as gift items. What could be tackier and less imaginative than a square of foam rubber?

Well, I surrender. Mad Mats has attacked the boring mouse-pad problem with such a creative vengeance that I'll have to repeal my policy. These pads *aren't* squares of rubber—not a single one is, in fact, square. They're cut to match the shapes of the wild, wacky, whimsical images on their surfaces—brightly colored painted designs like Tee Time (a giant golf ball), Rolls Rodent (a giant mouse of the quadruped variety), and Attorney (a bright blue shark); or photographic images like Pecs O' Plenty and Bachelor Pad (well-built male and female torsos, respectively), and Auntie Earth (the earth from space).




**Zonked for the Holidays** An Appled Apple menu? Tie-dyed desktop? 3-D scroll bars? Why not? It's the holidays!

I'm not usually a fan of wrist pads, either, because I believe they encourage people to rest their wrists while typing (not a great idea ergonomically). But as long as you promise to roost your wrists on them only when resting, I will tell you how adorable I find Donald (a wrist-pad–shaped dachshund), Albert (a wrist-pad–shaped alligator), and Jean (a wrist-pad–shaped *wrist*). Everything in the Mad Mats catalog is $14.99, and the catalog itself is hilarious reading (714/661-6236). If you have Internet access, look over the designs at **http://www.earthnet.com/~madmats** for a preview.

### The Computer Glossary

As even the dear, sweet Macintosh becomes so complicated that nobody understands it, the terminology and silly acronyms flung at us daily become less and less comprehensible. More and more, a computer dictionary is an obvious gift choice for your techno-struggling friends.

This one, now in its seventh edition, is one of my favorites ($24.95; Amacom, 518/891-5510). The author, Alan Freedman, has enough perspective to include terminology for *all* kinds of computers, from ancient mainframes to today's Macintosh. To test his mettle, I checked to see whether he had defined such current but baffling Macintosh terminology as *Kaleida*, *PowerTalk*, *OpenDoc*, and *ATM* (in its new, unfortunate sense of Asynchronous Transfer Mode). He had—and nicely, too.

The illustrations are bizarrely inconsistent in style: a FreeHand drawing here, a pencil sketch there. And I'm irritated that the electronic version of this dictionary is available only for DOS machines. But the definitions are so complete and well written that *The Computer Glossary* may be easily forgiven—and, for the holidays, easily given.

### Active Trainer 1.1

In honor of everyone's annual unfulfilled resolution to get into shape, here's a gift for New Year's Day instead of for Christmas. It's a CD-ROM hosted by the 1994 Mr. Universe, a friendly hulk who cheerfully admits that his proportions are "somewhat exaggerated." (He isn't quite as aware of the way he mangles spoken English grammar.)

In every other detail, though, this CD-ROM is surprisingly effective ($59.95; LaserMedia, 416/977-4320). From three different camera angles, Mr. Universe demonstrates proper weightlifting technique, while his female assistant shows you the aerobics. The fitness program is eerily tailored to your individual needs, based on the height, weight, pulse, and body-fat statistics you provide (a pair of flab calipers comes with the disc). That level of customization is only one impressive technical feat of this CD-ROM's design; the big, smooth QuickTime movies, self-explanatory navigation, and high production values are among the others. I couldn't help but giggle at the thought that there you are, slumped sedentarily in front of your computer, watching *other* people do your workout. Still, if the flesh is willing, this disc has the spirit.

### The Upshot

Incidentally, if nothing on this list gets your pulse pounding, I still stand by some of my previous years' suggestions. For example, few gifts induce more fond memories than the Connectix QuickCam, a $149 golf ball that makes small, grayscale, fun QuickTime movies with sound. And if you gave a loved one a share of Apple stock when I suggested it a couple years ago, congratulations. Not only was it undoubtedly appreciated, but it also *has* appreciated. That's enough to make anyone's holly-days happier. **m**

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Contributing editor DAVID POGUE is coauthor of the stocking stuffer for steel-reinforced stockings: the 1100-page *Macworld Mac & Power Mac Secrets*, third edition (IDG Books Worldwide, 1996).

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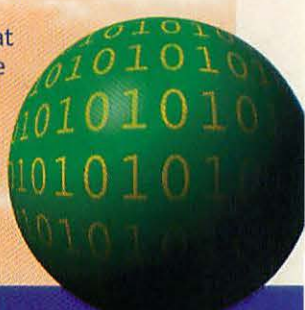
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❑ **Check if Applicable**
I'm an international attendee. Please ship my badge by Federal Express. Enclosed is an additional $45.

Please choose your package and fill out the form completely. Incomplete forms will be returned. One form per person; make photocopies for additional people. Registration forms received after December 4 will be returned unprocessed. Purchase orders cannot be accepted. All registration fees are non-refundable. A $20 fee will be charged for all returned checks. Send completed forms to:

**MACWORLD Expo/San Francisco**
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**Norwood, MA 02062**

**U.S. Badges:** will be mailed around December 18
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- ☐ 2. Architecture/Construction
- ☐ 3. Art/Design/Creative Services
- ☐ 4. Arts & Entertainment
- ☐ 5. Communications/Printing/Publishing
- ☐ 6. Computer Reseller/VAR/VAD
- ☐ 7. Consulting
- ☐ 8. Corporate/General Management
- ☐ 9. Distributor/Dealer/Retailer/Service
- ☐ 10. Engineering/R&D
- ☐ 11. Government/Military
- ☐ 12. Health/Medical Services
- ☐ 13. College/University
- ☐ 14. Elementary/High School
- ☐ 15. Legal Services
- ☐ 16. Manufacturing (Computer Industry)
- ☐ 17. Manufacturing (Non-computer Industry)
- ☐ 18. Marketing/Sales/PR/Communications
- ☐ 19. Other _____
- ☐ 20. Does Not Apply

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WHAT IS YOUR JOB TITLE OR FUNCTION? (Check one)
- ☐ 21. Corporate Executive (Pres./VP/CFO/Owner)
- ☐ 22. Controller/Treasurer/Accountant
- ☐ 23. DP/MIS Manager
- ☐ 24. Network Manager
- ☐ 25. Programmer/Analyst
- ☐ 26. Engineer/Scientist/R&D
- ☐ 27. Manager/Department Head
- ☐ 28. Professional (Lawyer, Doctor, etc.)
- ☐ 29. Consultant
- ☐ 30. Marketing/Sales
- ☐ 31. Educator
- ☐ 32. Art Director/Graphics
- ☐ 33. Editor/Writer
- ☐ 34. Student
- ☐ 35. Other _____
- ☐ 36. Does Not Apply

WHAT IS THE SIZE OF YOUR ORGANIZATION? (Check one)
- ☐ 37. Under 50
- ☐ 38. 50 - 99
- ☐ 39. 100 - 499
- ☐ 40. 500 - 999
- ☐ 41. 1000 & over
- ☐ 42. Does Not Apply

WHICH PERSONAL COMPUTER(S) DO YOU OWN/USE? (Check all that apply)
- ☐ 43. Macintosh Plus/SE/SE30
- ☐ 44. Macintosh Classic Series/LC Series
- ☐ 45. Macintosh Powerbook Series/Duo Series
- ☐ 46. Macintosh II Series
- ☐ 47. Macintosh Performa Series
- ☐ 48. Macintosh Centris Series
- ☐ 49. Macintosh Quadra Series
- ☐ 50. Macintosh Workgroup Series
- ☐ 51. PowerMac
- ☐ 52. Mac clone
- ☐ 53. IBM PC or compatible
- ☐ 54. Other _____
- ☐ 55. None

DO YOU RECOMMEND, BUY, OR APPROVE MICROCOMPUTER SOFTWARE AND/OR PERIPHERALS?
- ☐ 56. Yes
- ☐ 57. No

IF YES, PLEASE INDICATE FOR HOW MANY MACINTOSH COMPUTERS YOU HAVE THIS INVOLVEMENT.
- ☐ 58. 1-10
- ☐ 59. 11-25
- ☐ 60. 26-50
- ☐ 61. 51-100
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*Celebrated artists, illustrators, designers, creators share intensely useful tips.*

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### D. The Multimedia Conference.

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### E. The CD-ROM Conference.

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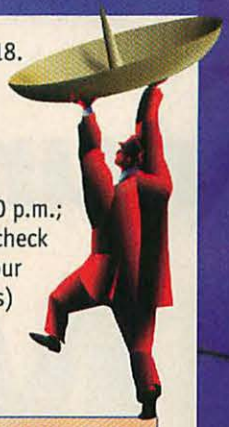
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**Get more information on the WWW at:**
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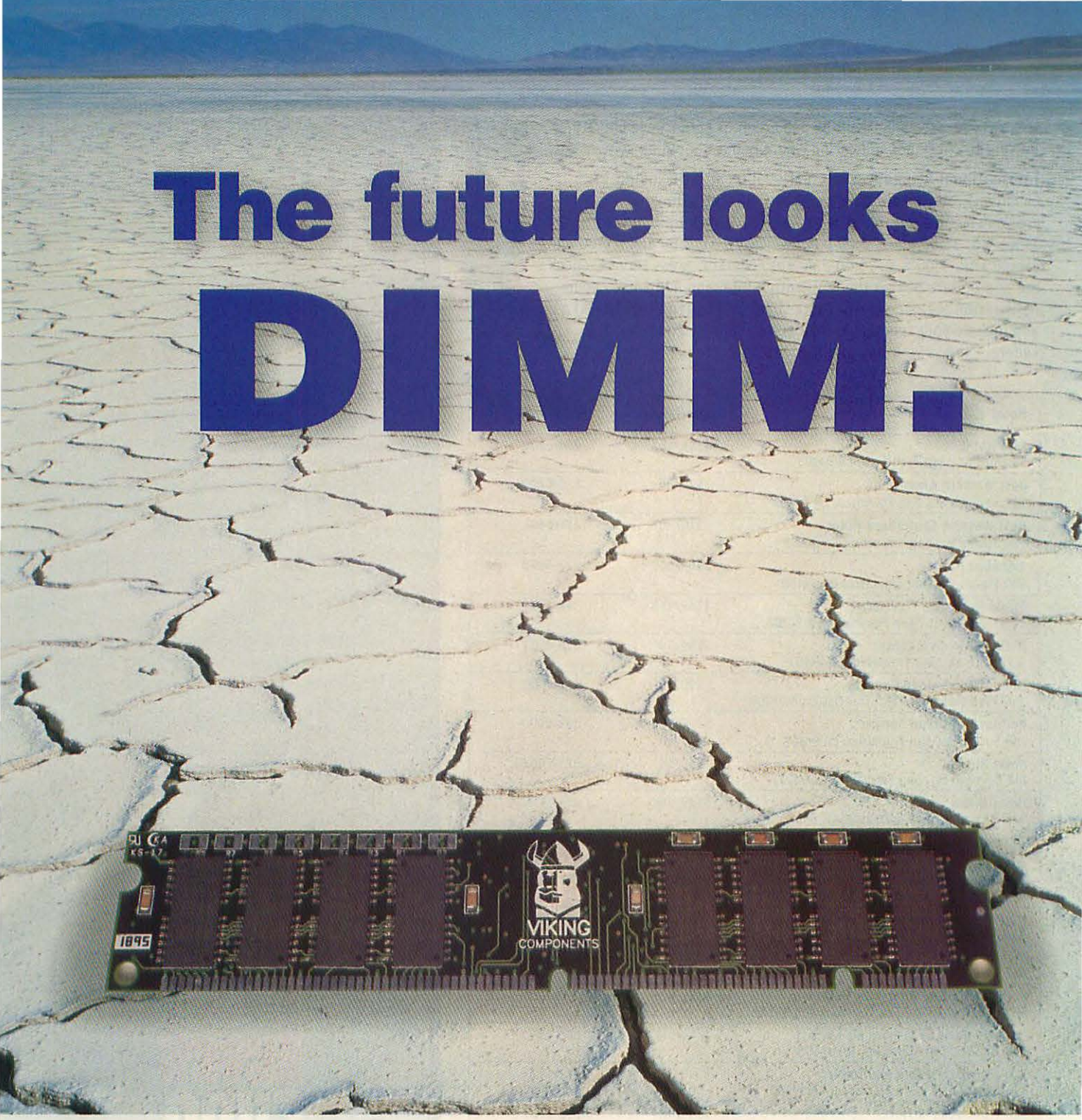
Macworld EXPO

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JANUARY 9-11: 10:00 A.M. – 6:00 P.M.
JANUARY 12: 10:00 A.M. – 4:00 P.M.

**CONFERENCE HOURS**
JANUARY 9: 10:30 A.M. – 5:30 P.M.
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# The future looks DIMM.




The new PCI-Based Power Macs have loads of room for RAM and Cache upgrades. In fact the 9500 is upgradeable to 512 Kb L2 Cache and a remarkable 1.5 GB of RAM! But fitting all that memory into such a small space required more than a shoe horn. It took a whole new technology called DIMMs (or Dual In-line Memory Modules). It's a technology that Viking helped pioneer, which basically fits twice the memory in half the space. It's also a technology that makes your future as a Mac user anything but dim.

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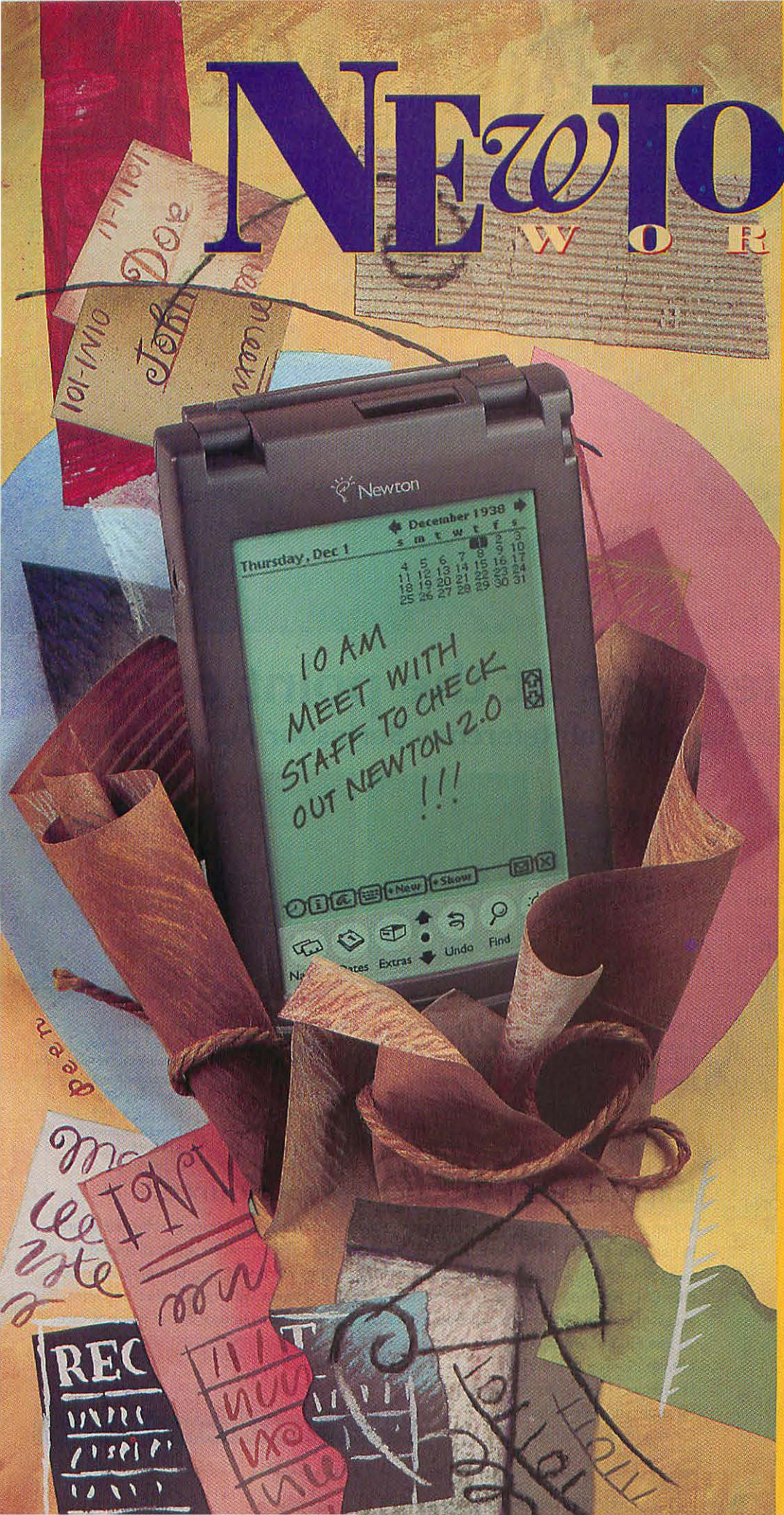
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# NEWTON WORLD




What's New With Newton?

**COMPUTING ON THE MOVE:** *Stories of Real People*

New Advances on Newton Applications

Edited By
Bronwyn L. Fryer



# Ready reference at the point of care.

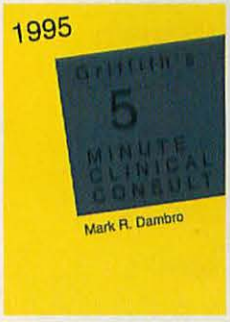
## The ERLI Professional Medical Reference Series for Newton® PDA's.

Reference information is rarely available where it's most valuable—at the point of care. With the ERLI electronic medical references, a Newton PDA becomes a mobile medical library, keeping key reference sources readily available at home or hospital, examining room or OR. Our Professional Medical Reference Series includes many of the most frequently used texts—Drug Information Handbook, 5 Minute Clinical Consultant and DSM-IV—and most are updated annually.

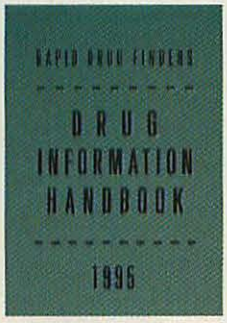
For information on how to put ERLI electronic medical references to work in your practice, call NewtonSource at 1-800-NEWTON-1 or visit the NewtonSource nearest you for a demonstration.

ERLI Education Research Laboratories Inc.

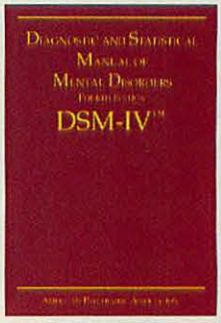
**Putting electronic medical information into practice.**



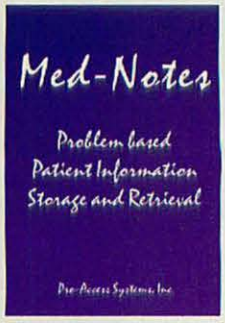

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# WHAT'S NEW WITH NEWTON

*The latest operating system upgrade for Newton moves Apple's PDA from the bleeding edge to the leading edge.*

**BY NICK WINGFIELD**

When I got my first-generation Apple Newton MessagePad—Newton for short—back in October 1993, friends would always ask to play with it. First, I'd explain that my personal digital assistant (PDA) wasn't a toy, but a computer. Then I'd configure my Newton for guest use to avoid corrupting my carefully calibrated handwriting recognition and send them on their merry way.

By the time I got my Newton back, my friends' notes would be a jumble of incomprehensible sentences, thanks to its poor handwriting recognition. "Don't understand it," my friends would say. Alas, my Newton had the same problem with me: it didn't understand. Eventually, the two of us reached an agreement. I would tolerate its whimsical view of my handwriting, if it would keep the rest of my life—or at least my contacts and my schedule—in order. It did, but I secretly longed for a PDA that was more sensitive to my needs.

ILLUSTRATIONS: JOHN BLECK



Like any first-generation operating system—remember version 1.0 of Windows?—the Newton 1.0 operating system had serious problems. But today, more than two years after introducing the technology, Apple Computer has released the first major overhaul of the Newton operating system (OS), a software engineering feat that finally liberates Apple's PDA from its Rodney Dangerfield status. The new Newton 2.0 OS is a thorough, top-to-bottom housecleaning of the original Newton software and includes some substantial interface enhancements and key improvements to the MessagePad's resident applications.




**A beefed-up word dictionary and much-improved printing and cursive handwriting recognition make the Newton 2.0 worth a second look.**

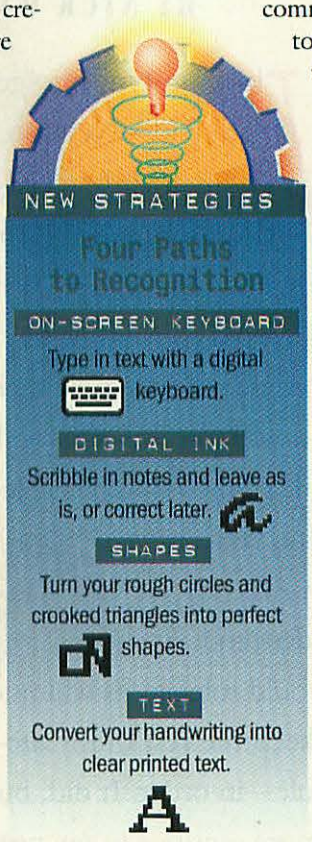
## Once Upon a PDA

In its first two years of life, Newton was proclaimed dead more often than disco. Among the first products in a new class of lightweight, handheld, mobile devices, Newton—along with the Tandy Zoomer and AT&T EO—was created as a small, intelligent, go-anywhere tool for capturing, managing, and communicating information. Designed to fit easily into a briefcase or purse or on a dashboard, PDAs like these were supposed to let you scribble notes with a stylus and touch-sensitive screen, send and receive E-mail or faxes, or retrieve a name, note, or appointment in less time than it takes to unzip your laptop bag.

Despite much ballyhoo from former Apple CEO John Sculley and an early round of kudos from the press in late 1993, it didn't take long before Newton started getting negative ink, mainly for its most radical feature: handwriting recognition. The original Newton MessagePad failed so miserably in this area that cartoonist Gary Trudeau devoted a week of his Doonesbury comic strip to ridiculing the MessagePad's recognition errors. *Saturday Night Live* also did a hilarious spoof of Newton, lampooning it as an intelligent refrigerator magnet/sticky note.

The MessagePad had other problems as well: a memory leak requiring frequent restarts, sluggish performance, short battery life, and poor links to desktop applications. Comparisons to failed products like the 1950s Edsel automobile were frequent, and some industry pundits even demanded that Newton be recalled. Sculley's mass market for PDAs didn't appear. After some initial sellouts, MessagePad sales fell flat. Other PDAs, like the bulky, overpriced EO, also suffered in the marketplace and were eventually pulled from shelves.

Despite all the bad press, Newton spawned a dedicated group of more than 4,000 developers and a vast library of shareware on CompuServe, America Online, and the Internet. There are currently more than 1,000 commercial and shareware applications for Newton. To an equally devoted community of over 100,000 users, Newton, warts and all, has as much potential to affect our lives as our PCs and Macs do now. "We all looked at the original Newton and said, 'We see the potential, here,' just like we looked at the Mac and saw the potential there," says Larry Slack, owner of RealWorld Testing, a consulting service based in Ithaca, New York. "The original 128K Mac was a toy, but we loved it!"




## In Recognition

With the release of Newton 2.0, Newton is poised to push beyond the ranks of these early adopters. Version 2.0 is an impressive product that offers much-improved mobile data capture and management features. Some industry observers think Apple may finally have delivered the useful, usable product it promised back in 1993. "Newton 2.0 is clearly the Newton Apple should have developed in the first place," says Gerry

Purdy, editor of *Mobile Letter*, based in Cupertino, California. "Finally, it's a stable working platform that a sense of believability can be built on."

The most remarkable improvement in Newton 2.0 was also the most maligned feature of the original: handwriting recognition. Its print and cursive recognition makes the earlier Newton seem positively illiterate in comparison. Recognition still isn't 100 percent accurate; the new Newton still requires a degree of discipline and penmanship, like parochial school. But notetaking, a challenge with the original Newton, is actually possible now, according to Newton 2.0 users. "I use the new Newton to take notes in depositions," says Jeff Goldman, an attorney based in San Francisco and a Newton 2.0 beta tester. "I don't carry a legal pad anymore. Newton 1.0 didn't read my handwriting nearly as fast or as accurately as Newton 2.0 does."



REAL PEOPLE

## Operating Under Her Own Power

"Until last year, I hadn't even heard of a personal digital assistant," says Janis Wheeler, substation inspector for the Idaho Power Company. "When I first got one, I said, 'Oh, that's a nice toy. Now what do I do with it?'"

It took Wheeler a scant few days to learn how the "toy" would transform her job. Last fall, she became the first substation inspector at Idaho Power to convert from paper entry to a PDA application developed by AllPen Software (408/399-8800). Called Idaho Power Substation Inspection System (IPSIS), the tailor-made software runs under Newton 2.0 on an Apple MessagePad 120. Armed with the 1.4-pound hardware device, Wheeler has freed up a week out of her month, which is now devoted to more important tasks than onerous paperwork.



"Before, it could take up to three hours to inspect a substation," says Wheeler. "Now it takes an hour and a half, two hours at the most." In the old days, she handwrote data on a clipboard while inspecting any of dozens of power stations in remote areas of Idaho, Oregon, and Nevada. She also had to log the same information to another sheet as a record to be left in the station. At the end of her day out in the field, Wheeler returned to the office and entered the identical information into a database. Worse, an administrative assistant later retyped the data on a desktop computer at Idaho Power's downtown office, since the company was not networked.

Along with saving time and eliminating errors due to double entry, the Newton saves Idaho Power money. "The utility industry is extremely competitive right now," says AllPen president Wayne Yurtin, who worked with Idaho Power to develop the IPSIS application. "This technology is helping utility companies reduce operating costs."

NAME **JANIS WHEELER**
OCCUPATION **SUBSTATION INSPECTOR**
COMPANY **IDAHO POWER COMPANY**
APPLICATIONS **IPSIS, EQUATE, GO FIGURE, NOW UP-TO-DATE, NOW CONTACT, GRAFFITI, NEWTON UTILITIES**

The IPSIS software meets needs specific to a substation inspector's job. For example, a pop-up list of inspection duties allows an inspector to fill in the blanks on screen, rather than write out long forms. Once the information is logged, the inspector plugs a serial port or network communications line into the MessagePad, then uploads the data to a FileMaker Pro database running on a Macintosh IIci network server. Anyone on the network can access it, generate work orders, schedule maintenance, or track potential problems by keeping a history of equipment.

Wheeler now says she couldn't dream of working without her PDA. "Carrying a one-pound MessagePad is far easier than lugging a laptop," she says. All she needs when she gets in her truck is her handheld computer, a holster for when she needs both hands free, extra batteries, a radio, and her cell phone. And she's looking forward to the near future when Idaho Power inspectors send and receive wireless E-mail and faxes using Digital Ocean's AppleTalk networking hardware.

"Now that we have the software perfected, I'll be training other inspectors and service workers," says Wheeler. "I'm hoping that, after they see how well this is working, other departments in the company will recognize the advantages of PDAs. They're a great, low-cost solution for what we do." **Leslie Crawford**

ACEY HARPER



Printed writing is where Newton 2.0 really shines. As in the first version of Newton, there's digital ink capture so users can jot down notes without converting them to text. But a new print recognizer, based on neural network software developed internally at Apple, now interprets my handwriting better than some of my friends do, even when I use abbreviations like "mtg." for meeting or "w/" for with. Thanks to a beefed-up word dictionary, cursive recognition, which is based on word recognition, is also significantly improved.

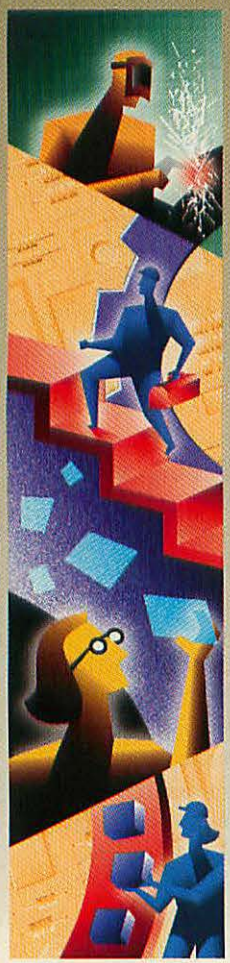
In all of its resident PIM applications—Names, Dates, and the Notepad—Newton 2.0 displays a caret pointer that indicates where new text will appear on the device. This feature was a cruel omission from the first Newton, where words seem to land wherever they please. The caret in Newton 2.0 has another useful feature: tapping it displays a pick list of punctuation marks.

For all its importance, though, handwriting recognition is not what Newton 2.0 is all about, points out beta tester Slack. "The main thrust of Newton technology is not handwriting recognition," he says. "The problem has always been getting the information in there to manage. Newton 2.0's recognition is a quantum leap forward." To Slack and other users, handwriting recognition is a means to an end. Newton' s information management facilities are the real reason they use the device.

## Managing the Info Flow

For most users, Newton's trio of resident PIM applications is where they live and breathe. With Newton 2.0, Apple has added loads of flexibility to the core applications, so information is easier to access and manage. In the earlier Newton, for example, it was nearly impossible to find ink notes in the Notepad. In Version 2.0, the improved Overview

## THE HARD PART: SORTING OUT THE PDAS



Like Macintosh and Microsoft Windows, Newton is the name of the operating system; Apple's hardware device is called the MessagePad. If that's not confusing enough, try the correct name for Apple's hardware/software combination in its most recent $699 reincarnation: "MessagePad 120 with Newton 2.0 Operating System." (Us plain folks should probably stick to calling the whole ball of wax "Newton.")

Nomenclature is not the only confusing thing about the PDA market, nor is Apple the only player. So far, according to BIS Strategic Decisions, a market research firm in Norwell, Massachusetts, Apple has been the most prolific manufacturer of PDAs, with 71 percent of the U.S. PDA market. It's also the leading manufacturer of Newton-based devices. But Apple has licensed the Newton 2.0 operating system to other vendors. Motorola (800/894-7353) offers Marco, a Newton equipped with two-way wireless communications via the Ardis network. Marco comes with wireless E-mail software, but applications vendors can exploit its wireless links as well. Harris Corporation's Dracon Division (800/787-3783, ext. 3106) sells a ruggedized, waterproof Newton called Craft Digital Assistant with wireless communications and backlighting, targeted at utilities workers and other field personnel.



On the operating system side, Newton 2.0's major competitor is Magic Cap from General Magic (800/468-4342). Newton and Magic Cap are like half-siblings—related but entirely different. Magic Cap is frequently described as being more communications centered than Newton, largely because it includes a sophisticated technology called Telescript, a programming language that sends intelligent agents out to a network to perform tasks for users.

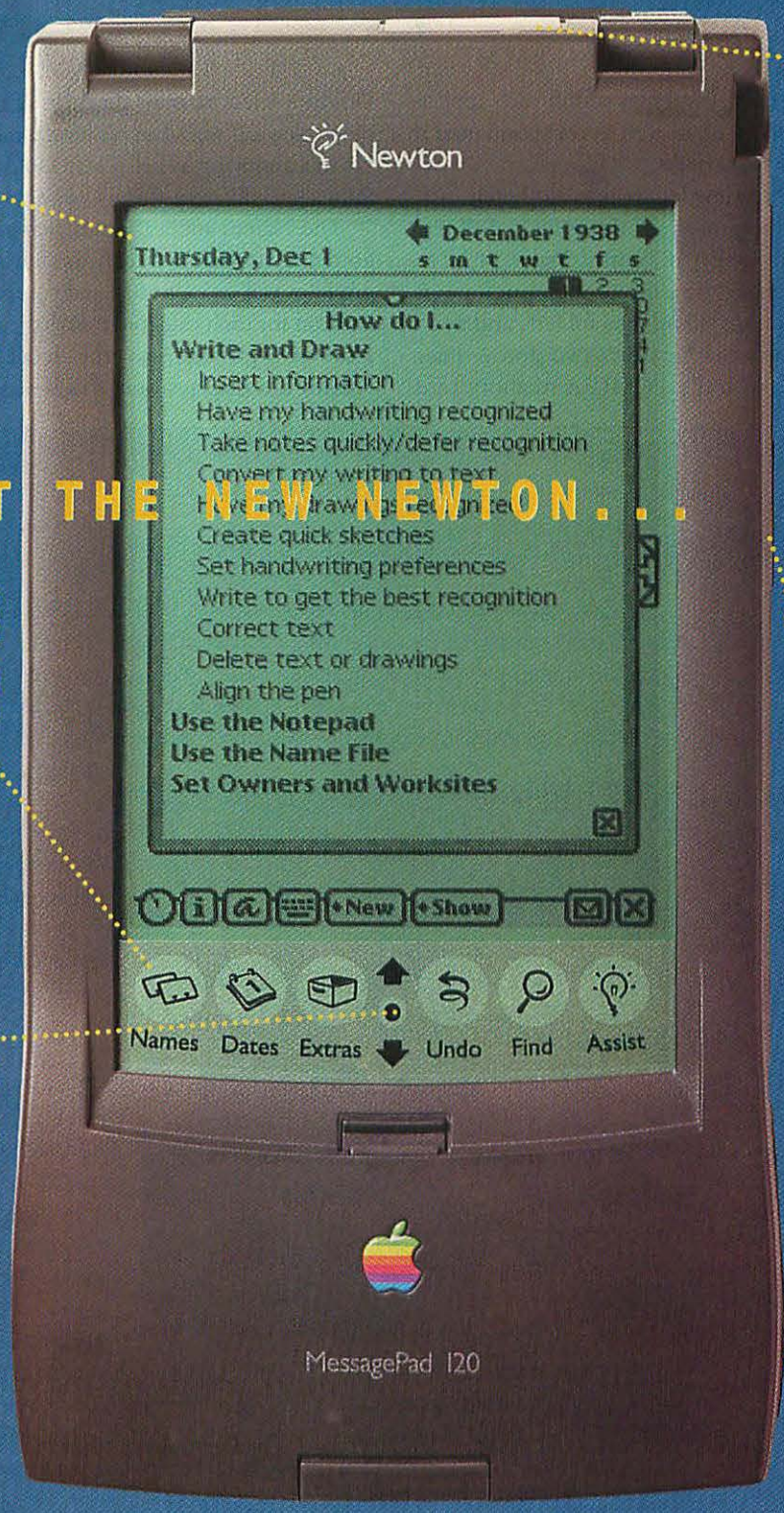
Newton 2.0 is closer to Windows 95 or a Macintosh environment and is more adept than Magic Cap at capturing and managing information. Newton also works with a number of communications cards and cellular and wireline modems and with Motorola's messaging card.

### HOW TO UPGRADE

The Newton 2.0 operating system is now shipping with all new MessagePad 120s, which feature the same hardware configuration as the original: an ARM 610 20-Mhz RISC processor with 1.3 MB of usable RAM and a PC card expansion slot. (Not every PC card is compatible with Newton: be sure to ask the vendor if a card is Newton-friendly before plunking down your hard-earned cash.)

Original MessagePad 120 users can upgrade from Newton OS 1.5 to 2.0 for $109 by sending their PDAs in to Apple for a ROM exchange. MessagePad 100 and 110 owners can't upgrade their Newtons, but Apple offers a trade-in program for the older devices. For more information on upgrading, call Apple at 800/767-2775. **N.W.**

# MEET THE NEW NEWTON . . .




The Notepad is like a continuous roll of paper for writing and sketching. It contains checklist and outline facilities.

A panel of icons provides access to Newton's resident applications, search facility, and intelligent assistant.

The Overview button displays summary information for notes, names, dates, and items from other applications.

Through the infrared port, users can beam notes, appointments, and names to other Newtons.

The telescoping pen is to Newton what the keyboard is to PCs: a way of capturing data and interacting with the device.

The Type II PC Card slot accepts memory expansion cards and both wireless and wireline modems.

Newton connects to printers, modems, and desktop computers with an RS-232 serial cable. The serial port also supports connections via LocalTalk cables, Apple's standard for local area networks.

## NEWTON TIMELINE

**SUMMER 1987**
Apple launches a small "special projects" effort. Its goal: to research wireless networking, investigate handwriting and formula-recognition technology, and define a new architecture called "Newton."

**MAY 1992**
Apple Computer provides the first glimpse of Newton, the company's first major new product since the popular Macintosh personal computer was introduced in 1984.

**AUGUST 1993**
From the stage at Boston's Symphony Hall, John Sculley and Gaston Bastiaens announce that the first Newton—the MessagePad communications assistant—is shipping. Reviewers rave, then hiss.

**JANUARY 199**
An even more improved MessagePad 120 ships; Motorola announces its Marco Wireless Communicator based on Newton technology. In August, Harris Corporation's Dracon Division licenses Newton for the SuperTech 2000, Craft Digital Assistant.

**MARCH 1994**
Apple introduces the improved MessagePad 110.

**December 1995**
Newton 2.0 ships.

1987 1988 1989 1990 1991 1992 1993 1994 1995

button, which displays all files within each application, now displays ink as well as text contained in Notepad's individual notes.

The new Overview lets you to do batch mailings, faxes, infrared beams, or printings of all resident files, whether they're Names, Dates, or Notepad files. And unlike the older Overview, it now enables mass deletions, filing into folders, and swapping of items between Newton's two stores—internal RAM storage and a PCMCIA memory card. Doing a selective mass deletion of notes with the older Newton was like polishing a car with a Q-tip. "It was annoying as hell," says Goldman. "Moving things into different folders was a problem."

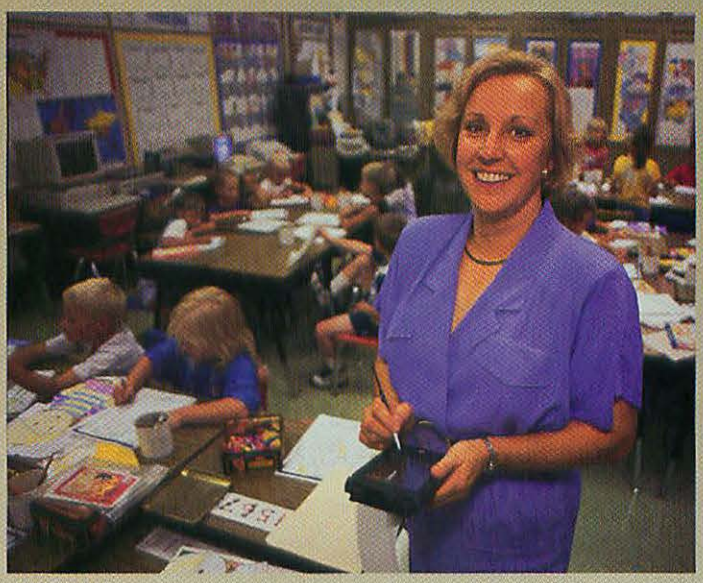
The Names application in Newton 2.0 has also gotten an appealing facelift. It allows you to create group as well as individual and company name files. An icon for each category makes it easier to identify a file at a glance. Also, the detail view for each Names file displays only fields—last name, work

REAL PEOPLE

## How a Teacher Makes the Grade

Phyllis VonStrohe, a first and second grade teacher in Covington, Kentucky, used to take notes about her students' progress and achievements the hard way. While watching Tommy or Janie work on a painting or play with other children in the classroom, VonStrohe had to take fast, copious notes–while standing, juggling a pen and notepaper–that she then had to retype and reorganize into a report.

Gathering, collating, and reporting demanded a total of 24 hours every nine weeks–time that VonStrohe would have preferred to spend on activity planning. "I had to collate and review five sets of handwritten performance notes for each student," she recalls. "I spent a three-week period just writing the narrative portions of the students' reports for 24 students."



NAME **PHYLLIS VONSTROHE**
OCCUPATION **SCHOOL TEACHER**
COMPANY **TAYLOR MILL ELEMENTARY, COVINGTON, KENTUCKY**
APPLICATIONS **LEARNER PROFILE**

Today, VonStrohe takes it a little easier. Using Learner Profile from Sunburst Communications (800/321-7511) on a handheld Newton MessagePad 120, she has cut the time it takes to prepare narrative evaluations from 24 hours to 9 hours.

For the K–12 market, Learner Profile ($99 for the PDA software for Macintosh or $109, including a special cable, for the PDA component for Windows, and $299 more for the desktop companion program) on the MessagePad permits VonStrohe and other teachers to replicate the gradebook process. Educators can define the number of students and types of grades and walk around the classroom while tapping on children's names, entering grades, and displaying statistics such as the grade mean, mode, and standard deviation. They also define student's levels of performance by category, such as "developing" or "mastered."

Teachers can transfer the recorded data to their desktop IBM-compatible or Macintosh PCs to print out reports. VonStrohe connects her MessagePad to her desktop machine while her students line up for lunch. When she walks back five minutes later to disconnect the MessagePad, she's ready to record for the remainder of the afternoon. "It's a very easy to learn, simple to use, powerful environment," VonStrohe says. "I found that not only did the quantity of observations that I recorded increase, but the quality of the observations was improved."

A new version of Learner Profile for the Newton 2.0 takes advantage of many of the new operating system's features. Use of ink text allows teachers to quickly write evaluations without waiting for recognition; these notes can stay in digital ink form or be converted to text later. The new product also employs Newton 2.0's speed improvements in storage and the new screen rotation to allow users to access and see more data more easily.

As a mobile worker who welcomes any help in increasing classroom efficiency, VonStrohe says she can't imagine going back to using a pen and paper. "I was doing cartwheels down the school hallway, as were other primary teachers," she notes. "With this kind of technology, the black gradebook we all remember will soon be a relic of the past." **Marie d'Amico**

PATRICK McDONOGH

# The MessagePad 120 personal digital assistant makes your information as mobile as you are.

The MessagePad® 120 allows you to organize your work and personal life; to integrate information with your personal computer; to communicate using faxes, pages, and e-mail; and to expand your capabilities with third-party solutions.

It has a built-in Notepad, to-do list, datebook, telephone log, and address file for organizing personal and business affairs, as well as Pocket Quicken to help organize personal and business expenses.

You can enter information in many ways: as digitalink, printed text, hand-drawn graphics, or with an on-screen keyboard. There's even an optional external keyboard.

Pen-based navigation and data entry make finding information easy and fast.

The improved recognition software of MessagePad 120 transforms your handwriting into typed text. You can also print your information as it appears on the easy-to-read screen, or as fully formatted pages.

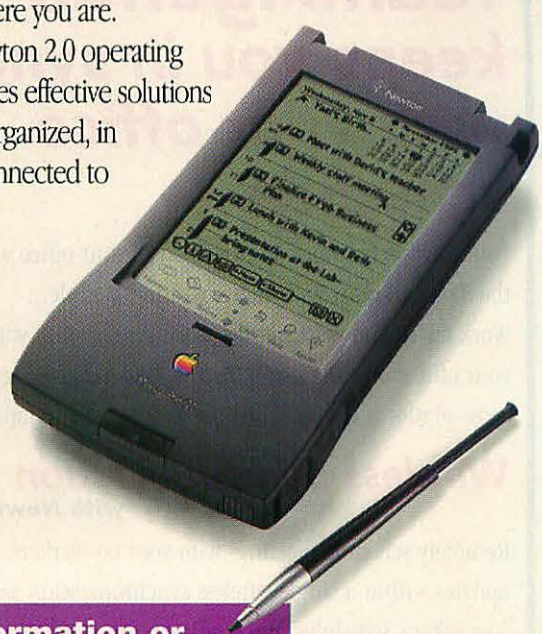
The MessagePad 120 can receive wireless messages and alphanumeric pages, and can send and receive faxes and electronic mail. Included eWorld™ software allows you to communicate with Internet users via eWorld.

The MessagePad 120 also lets you share and exchange information with either Windows software–based or Macintosh® computers using the included Newton® Backup Utility and Newton Press software.

Your MessagePad 120 can also be customized with software applications as well as accessories and on-line services that put critical information at your fingertips, no matter where you are.

The Newton 2.0 operating system provides effective solutions to keep you organized, in touch, and connected to your world.

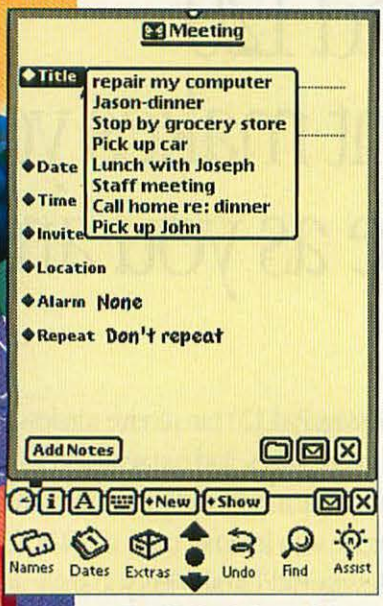
Newton



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**The pick lists in Newton 2.0 include up to eight previously entered items.**

phone number, and so on—that have been filled out, reducing the on-screen clutter of the earlier version.

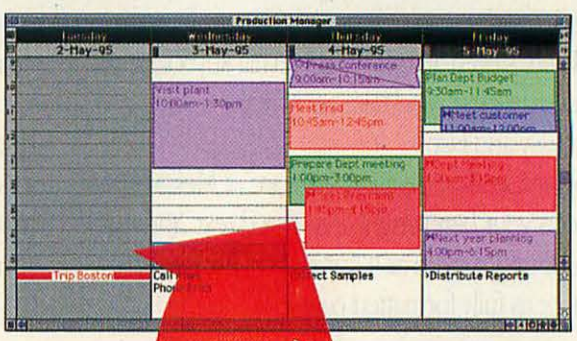
Also gone from Names are the niggling limitations on the number of fields that you can attach to a file. You can now add multiple E-mail addresses, phone numbers, and other items to a name. There is an editable pick list at the bottom of each Names file that displays custom categories—"Turn ons," for example. All around, Newton 2.0's pick lists are far more intelligent than its predecessor's, and pick lists include, in some cases, the eight items previously entered into a field. Pick lists are a superb way of streamlining tasks by reducing dependence on handwriting recognition, and Newton 2.0 exploits them well. "Pick lists streamline Newton 2.0 immeasurably," says Goldman. "Anything that eliminates hunting and pecking is a big help."

Apple has included a new application, Calls, in Newton 2.0 that ties in well with the Names application.

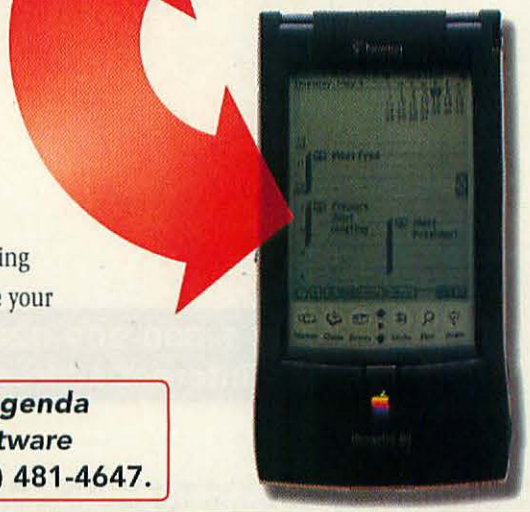




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# Newton 2.0

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Visit us at www.info.apple.com/newton or in the Newton forum on your on-line service.



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It's excellent for keeping track of telephone calls. Newton records the recipient, duration, and date of calls, as well as notes related to the call.

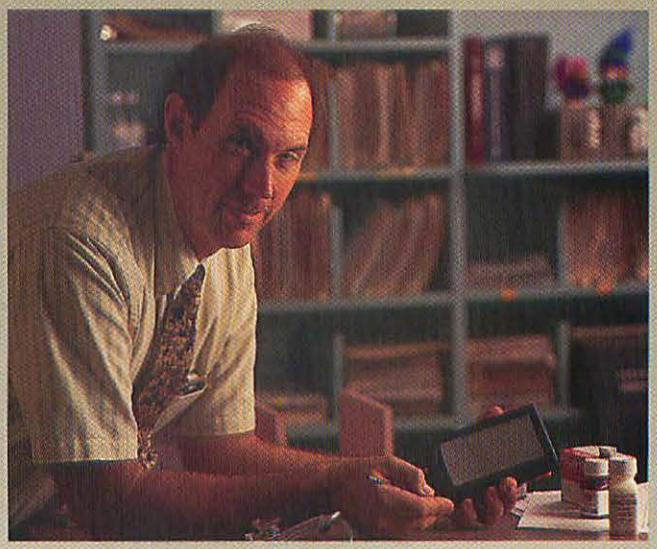
The Notepad and Dates applications have been refined in the new operating system. Not just for linear notetaking, the Notepad now includes facilities for creating collapsible outlines and checklists. Instead of scrolling papyruslike to the end of the Notepad and drawing a horizontal line to create a fresh note, you can simply select New Note from Newton's status bar. Dates also has some interface enhancements, including icons for different types of events. Pick lists make it easier to enter appointments and to view the calendar in different ways.

REAL PEOPLE

# A Prescription for the Digital Doctor

Dr. Dale Adamson, a private-practice physician in Naples, Florida, is the first to tell you he's a technical neophyte. "I'm a good doctor, but I don't know anything about computers," he admits.

Still, Dr. Adamson's job requires that he keep flawless documentation. In the old days, he carefully wrote down every fact about his patients' health to have accurate records for pharmacies, insurance companies, hospitals, and other care professionals. But the time it took to locate a patient's paper file, take notes on what the patient had to say, write out a report, and reinsert the information into the patient's records was too big a chunk of Adamson's time, which includes up to 3,000 office visits a year. "I was spending two hours a day just on notetaking," he recalls.



NAME DR. DALE ADAMSON
OCCUPATION PHYSICIAN
COMPANY SELF-EMPLOYED
APPLICATIONS POCKET DOC, MEMORY MANAGER, DYNONOTE SOFTWARE

In 1993, Adamson switched from handwritten notes to taking notes with an Apple Newton MessagePad 100. While the device helped record notes, it frequently misread the doctor's writing; once, the hard drive froze after he'd added some 1,000 words of medical terminology.

Then in February 1995 Adamson heard about Pocket Doc, from Physix (713/797-1199), a software application designed by an engineer who is also a doctor. Pocket Doc's creator, Dr. Tom Giannulli, couldn't find any good medical software specifically for PDAs, so he created an application himself. "I knew that doctors wouldn't carry anything around that didn't fit in their pocket," explains Giannulli. "They're very mobile and don't have the patience or time to lug around a lot of equipment."

The Pocket Doc software allows doctors to gather data in real time, using the PDA's pen as a pointing device to call up specially designed menus and tap out a selection of keywords. With Pocket Doc, the doctor can easily create flowing paragraphs from a patient's history. In addition to serving as a meticulous record keeper, storing medical records of at least 100 patients, formularies for 800 drugs, and 1,300 billing codes, Pocket Doc enables the medical practitioner to send prescriptions to the pharmacy, access medical data and terminology, and even tap into a pharmaceutical database that reduces dosing errors by automatically listing dosages for various medicines when a doctor taps out a prescription.

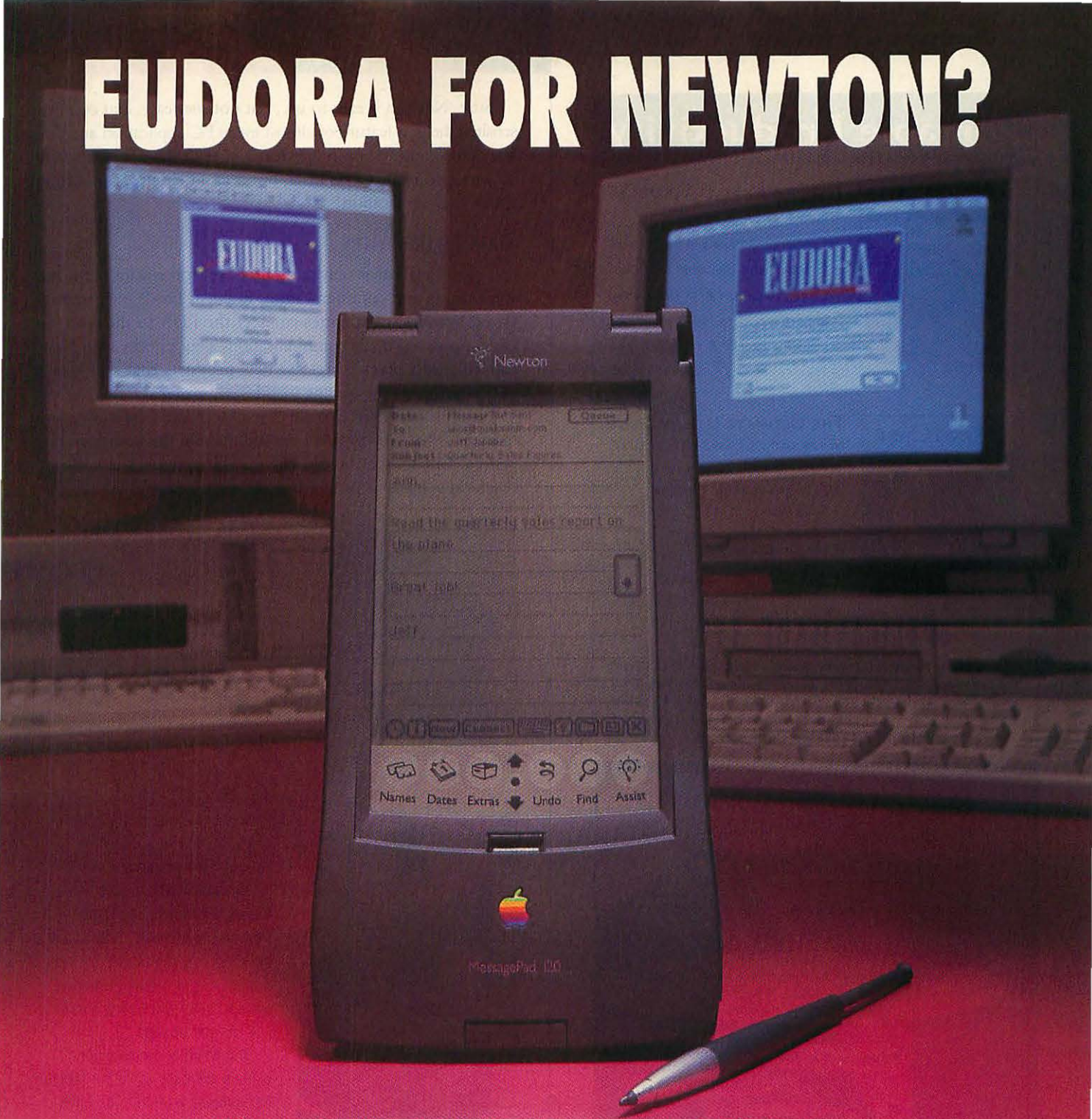
"Pocket Doc has dramatically changed the way I take notes," concurs Adamson, who, when interviewing a patient, simply taps information directly into templates, a method of chronicling a patient's medical history that proves not only convenient but more reliable than handwritten notes. "The real beauty is that, because managed care requires such careful documentation, I can safely have all the necessary records at a Medicare audit and meet all of their criteria."

Along with improving the quality of care and reducing paperwork, Pocket Doc allows physicians like Dr. Adamson to move information to and from a personal-computer-based patient record. For example, when performing a consultation at a hospital, a doctor can easily download information from the hospital's server to access a patient's history of medications and lab records. "My PDA has already paid for itself in documentation costs," says Adamson.

Dr. Adamson says that, computer novice that he is, he's one of the first family physicians he knows to have embraced this black bag of the future. In fact, he's ready to leap even further into the 21st century. "I'm asking my wife for a MessagePad 120 loaded with Newton 2.0 for Christmas." **Leslie Crawford**

C. J. WALKER

# EUDORA FOR NEWTON?




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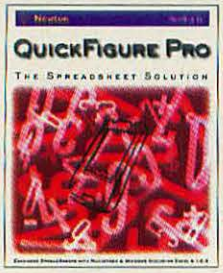
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QUALCOMM

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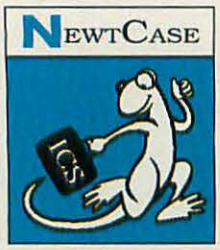
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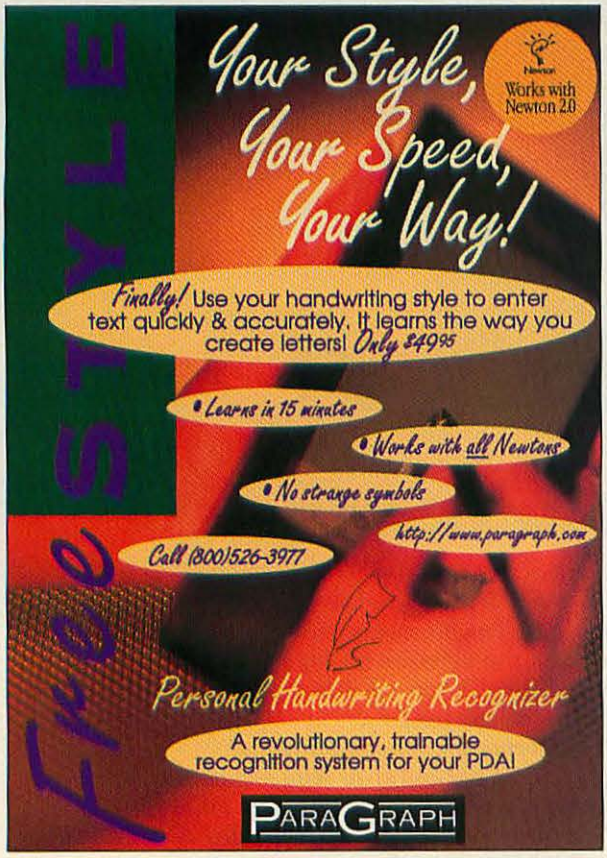

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Sure, Newton is easy to use, but not *that* easy, and context-sensitive help, a feature of almost every PC application and OS, was completely absent in Newton 1.0. With the new, improved Newton, you can access brief, but useful help guidelines from within each application.

## Walking the Wires

Capturing data is only part of the Newton equation: the rest is managing and communicating. Resident fax, E-mail, and infrared beaming capabilities connect the PDA to the world at large. Apple has made communications a big priority with Newton 2.0, with plans to release new products that will give it greater access to the on-line world.

Newton's resident eWorld E-mail software—formerly, confusingly called NewtonMail—is still there in the new operating system. But unlike the old client, which logs on to eWorld, batch-downloads incoming E-mail, and then hangs up, the new

## NEWTON'S READY FOR THE WORLD, BUT



Vertical markets such as health care, field service, and sales-force automation are turning to Newton as a mobile solution. In those areas, a laptop's size, keyboard, and boot-up time can hinder rather than help productivity. There are already more than 300 applications aimed at these vertical markets, Apple says. The first Newton, while flawed, demonstrated that the technology is viable, says Steve Capps, an Apple Fellow and chief Newton programmer. "We always believed in this product. We wanted to prove that it's worthwhile to carry something small like Newton around."

But whether ordinary consumers will belly up to the Newton bar remains a more open question. The reason, conservative voices note, is that Newton is the platypus of the mobile market, a tricky animal to define. As such, it's not yet clear where Newton fits into the mobile computing mosaic. "It falls somewhere between a notebook computer and an organizer," says BIS Strategic Decisions senior analyst John Hulak.

software lets you maintain a connection and select only those messages you want to download. eWorld is Apple's commercial on-line information service; Newton gives you access only to an E-mail component through which you can exchange messages with anyone on the Internet.

Although fine for E-mail, eWorld isn't nearly as popular as other on-line services. Fortunately, you can now use Newton to access mail on other services, including America Online, CompuServe, and even FirstClass bulletin board services. Also in the works from Apple is Newton software for TCP/IP, the protocol of the Internet, which will allow developers to create a new breed of Internet-savvy Newton applications. (I personally think that a World Wide Web browser for the Newton could be a hot application, considering the Web's popularity right now.) You can use the new Newton to receive, as well as send, faxes.

Some analysts consider wireless communications to be vital to the future of PDAs. Right now, the wide area wireless data

## IS THE WORLD READY FOR NEWTON?

Users, too, have differences of opinion on just what the Newton is. "Newton is an instant access device," says Newton 2.0 beta tester Todd Wilson. "It differs wildly from a portable computer like a PowerBook." Others see it as an information-gathering device. "For notetaking, Newton is the way to go," says Jeff Goldman. "If you're not doing spreadsheets, I don't see the need for schlepping 5 pounds of computer around. I got rid of my PowerBook 180."



The difficulty in defining just what a PDA like Newton is makes it tricky to sell, even to a potentially huge market. Though the consumer market for PDAs isn't "there yet," according to Hulak, the buying public is nevertheless hog-wild on the notion of smallness—or at least mobility. In their personal and professional lives, people are on the go and bringing information with them. According to BIS Strategic Decisions, 25 percent of all personal computers now sold are laptops, appropriate for "big" tasks like assembling a presentation, number-crunching a spreadsheet, or writing a report. But Newton, because of its size, is better suited to applications like recording information and E-mail access. And the market potential for this smaller variety of mobile computing appears vast, with more than 44 million people in this country defined as mobile workers, according to a recent BIS survey.

Still, the question remains: are you ready for Newton? The $699 price tag of the MessagePad 120 with Newton 2.0 is about what previous versions have cost, but may be too pricey for you to take the plunge. Nevertheless, if you've got a life that needs organization and some intelligent help, if you want to stay mobile and stay connected, Newton 2.0 may be an investment worth making.

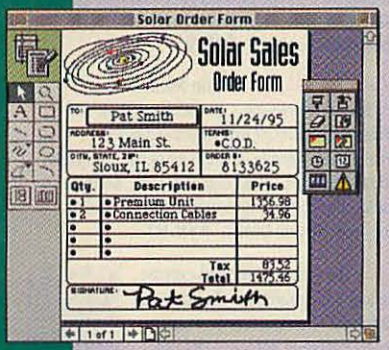

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industry suffers from high prices that make it too costly for most users. Still, a number of hardware peripherals can connect Newton 2.0 users to two-way wireless local area and wide area networks, and these may come in handy as wireless communications technology improves.

## Desktop Connections

Most early adopters learned very quickly that Newton doesn't replace the PC, but rather augments it, emphasizes Jon Hulak, senior analyst at BIS Strategic Decisions, in Norwell, Massachusetts. "You still want to connect back to your main computing environment on the desktop. That's where most of your PIM data resides," argues Hulak. For this reason, connectivity between the PDA and the desktop is critical, so that you're not maintaining a separate address book on each.

A new version of the Newton Connection Kit for Newton 2.0, called Newton Connection Utilities, lets you back up your Newton data to the Macintosh or other PC via modem, as well as providing serial cable and LocalTalk connections. To tap into the market of desktop PC users, Apple has also provided third-party software vendors with tools that let users keep corresponding files mutually updated, so changes made in one are reflected in the other. For example, Now Contact and Now Up-to-Date, two PIMs ($99 for both) for the Macintosh from Now Software (800/275-1669) include Newton synchronization features.

Although Apple has made some impressive changes to Newton software, there's significant room for improvement in other areas. The company's current Newton hardware device, the MessagePad 120, is screaming for some built-in communications features, such as an integrated modem or a pager. And although Apple's optional keyboard for Newton is fantastic, it's far too large to fit into a standard Newton carrying case. Still, these faults are dwarfed by the gigantic improvements in the operating system.




**Calls, new to Newton 2.0, keeps track of telephone calls, including names, dates, and durations, and lets you make notes as well.**

## Another Look

Despite all the savage criticism the first Newton received, one publication, *Microprocessor Report,* managed to lift its head above the negative hype that followed Newton's release. In a September 13, 1994, editorial titled "The Birth of a Platform:

# a Ph.D. for Your Newton



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Launch of Apple's Newton Is a Watershed Event," editor Michael Slater wrote, "With the hectic pace of the computer industry, it's easy to become jaded and cynical about new products. The first Newton product is easy to criticize. . . . But the emergence of Newton should not be mistaken for just another new product. It is the birth of a platform—an event likely to have great significance for the future of computing."

The reason? Newton has the upper hand when it comes to true go-anywhere computing. "Standing with a PowerBook in front of someone isn't socially acceptable," says Todd Wilson, a graduate student at a major research university and Newton 2.0 beta tester. In his professional life, attorney Goldman has the same experience. "When I'm in court with a laptop in front of me, it blocks me from the person I'm supposed to be looking at. Newton is less socially intrusive."

That's the beauty of Newton: It's computing, but doesn't feel like it.

*Nick Wingfield is a reporter at* InfoWorld *who specializes in the Internet and wireless communications. He can be reached at nick_wingfield@infoworld.com.*

WHERE TO BUY

## GET 'EM WHILE THEY'RE HOT

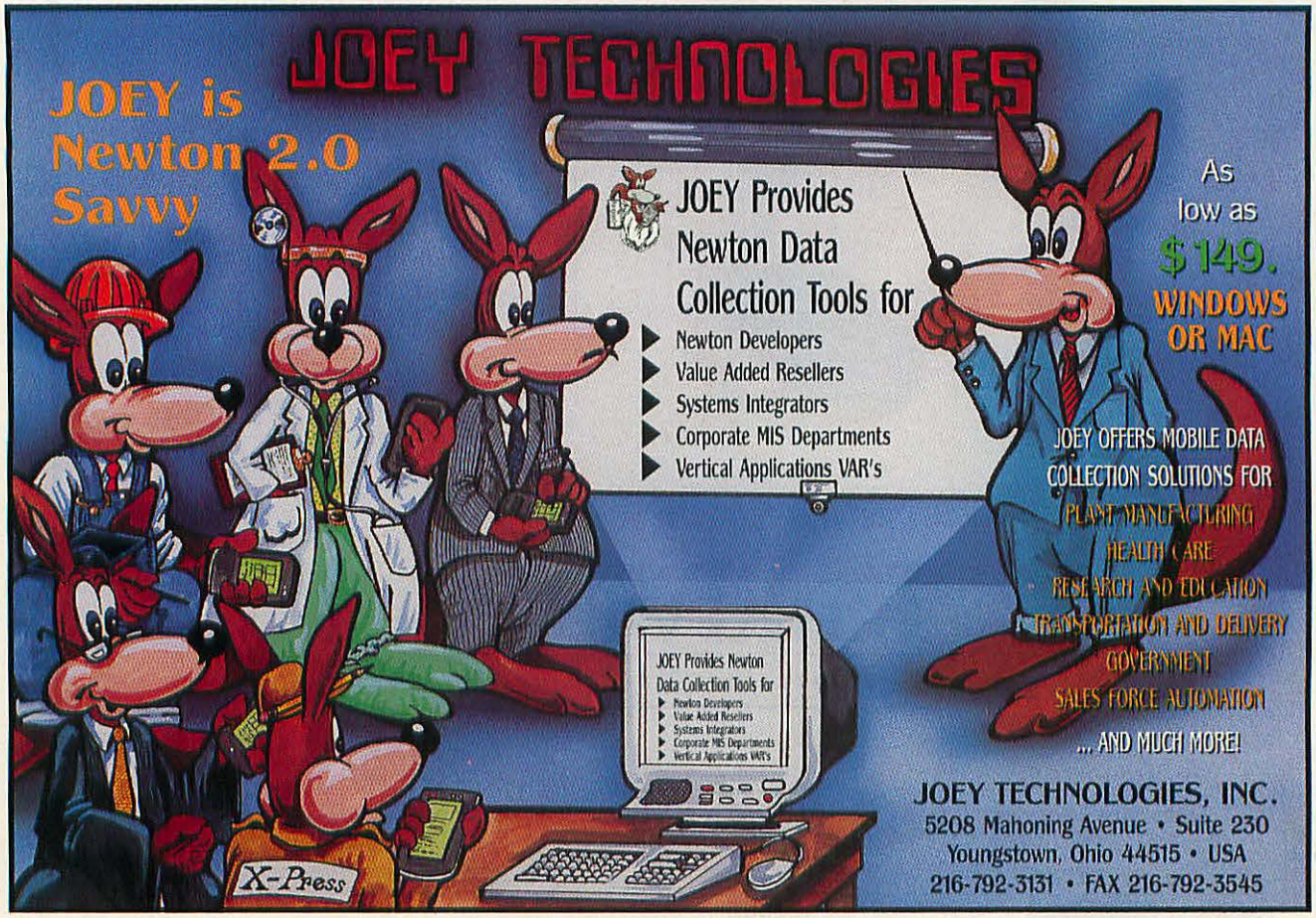
For information about purchasing a MessagePad equipped with Newton 2.0, call the Newton Source line at 800/639-8661, or visit one of the following Newton Source stores:

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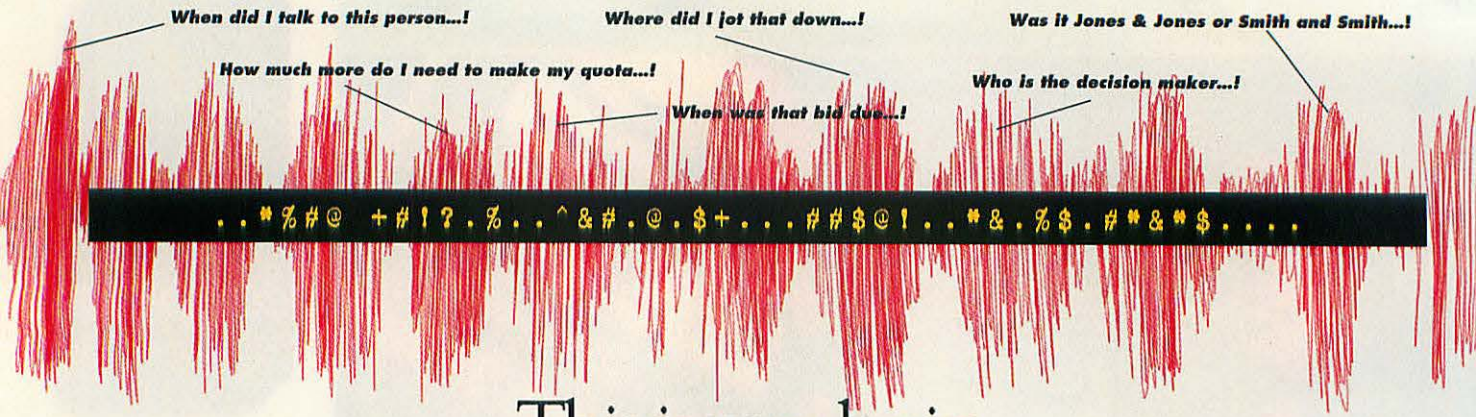
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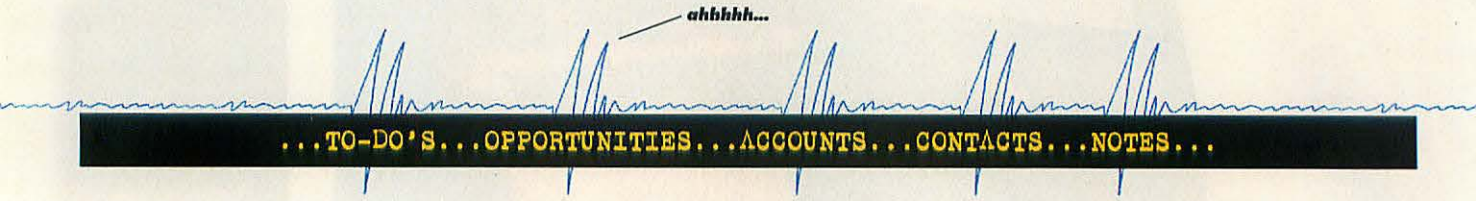
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## Link-Optimized Contact & Opportunity Management for Professionals in Motion!

Suffering from information overload?

Introducing **Locomotion**™ from PenUltimate,™ Inc.*– the first *truly mobile* contact and opportunity manager that helps you eliminate mental clutter and focus energy on fulfilling your professional and personal *opportunities*.

It runs on the ultra-portable Apple® MessagePad™ (and other PDAs equipped with the Newton™ 2.0 Operating System) so it fits in your hand, pocket, purse or briefcase. Desktop computers are terrific tools for organizing and managing impossibly large volumes of data… that is, as long as these tools are readily accessible *and* convenient.



The Apple® MessagePad™

*The developers of SalesForce™

**Locomotion**™ on the Apple® MessagePad™ can be used anywhere to record, manage, organize and access information quickly and easily with its very powerful linking and searching capabilities.

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Call PenUltimate™ at **714-442-6700** or FAX a request to 714-476-8411 to receive information about **Locomotion**™ on the Apple® MessagePad™ with links to GoldMine™ – a *truly mobile* business information management solution.

**Available Early '96!**

# Locomotion™

*Link-Optimized Contact and Opportunity Management for Professionals in Motion!*

PenUltimate™
SOFTWARE SOLUTIONS FOR MOBILE COMPUTING

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# New ADVANCES ON NEWTON APPLICATIONS

*No room for a notebook? That's no excuse for sloughing off that spreadsheet or postdating your expense report. Here's a selection of new pocket programs that you can use in the skinniest of circumstances.*

BY STEVE MANN

I used to loathe business traveling. I invariably missed an appointment or lost the phone number of someone I absolutely had to talk to. The worst part came at the end, when I had to transform the huge pile of hotel bills, taxicab stubs, restaurant receipts, and other scraps of paper into a tidy, accurate expense report.

Fortunately, I've discovered tools I can take along that keep me both secure and solvent without my having to worry about dislocating my shoulder lugging a laptop around. Here's the skinny on a slew of new applications designed for the Newton 2.0, along with a sneak peek at some software in the works for the portably minded.

## Managing Your Money, Minutely

**POCKET QUICKEN**
*A bundled-in, minimalist version of Quicken for mobile professionals.*
Intuit 800/243-4650

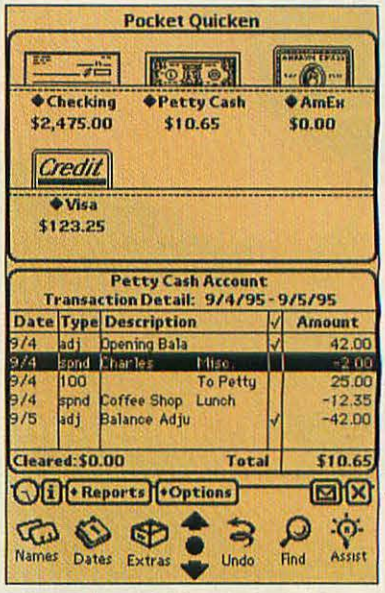
If you'd rather deal with your financial tasks in small, easy-to-swallow bites than in fattening, filling ten-course meals, Pocket Quicken, a program that comes bundled with Newton 2.0 MessagePads, may be just the ticket. This slimmed-down version of Quicken gets you up and running on your accounting activities with a minimum of fuss.

You can set up accounts for your cash, credit cards, checkbook, or other money matters and enter data as you go. If you categorize your purchases by activity, you can define a category, such as "Vacation," and group all your vacation expenses in one area, or you can report by date range—say, from August 1 to August 12. To save you the headache of setup and data entry, a modifiable QuickList gives pop-up views of the most common expense types, such as restaurants, hotels, and auto rentals.

Unlike the full-fledged desktop version, which offers a wide range of reporting types, Pocket Quicken offers just four different simple types of reports (account, category, expense, and income) with optional date ranges. But for most mortals, this limited reporting is more than enough.

By connecting your MessagePad to a printer, via the serial port or a network connection, or to a fax modem, through the serial port of the PC card slot connected to a phone line, you can print or fax any report. When you want to synchronize your pocket reports with the big brother version running on your desktop, you can use a utility called Quicken Connect. This software automatically synchronizes your desktop data with the stuff in your pocket and then downloads the updated file to your PDA. (Unfortunately, Connect has no option for downloading your Quicken data to Pocket Quicken when you first set it up.)

On the other hand, if you'd just as soon not think about your money at all, Newton leaves you with a nice alternative. Because the program is stored in RAM, you have only to delete it to make room for something more amusing, like Solitaire.




**A PDA version of Quicken, Pocket Quicken lets you manage your income, accounts, and expenses while you're on the go.**


# Newton Software Development

AllPen® Software, Inc. specializes in custom software development for Apple's Newton technology. Whether it's a general or industry-specific solution your business requires, AllPen Software can deliver the pen-based software you need.
Our expertise includes:

Experienced in:

- Field Data Collection
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- Mobile Inventory
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- Wireless Applications
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## Applications for Newton

To date, more than 300 companies have developed applications for Newton. Some of these include:

**GRAFFITI** Handwriting recognition software for those with a need for speed, based on a simplified version of the alphabet; once you learn it, the PDA recognizes your handwriting instantly ($79; Palm Computing, 408/848-5604).

**FORMLOGIC** A forms package providing companies with all they need to create complex data-gathering applications; now available for Newton 2.0. The FormLogic Builder component costs $895; the server component is $1,095 (Wright Strategies; 800/666-1228).

**GOFIGURE** For people who live by the numbers, this $79 package offers 16 calculators that do everything from figuring out what to pay the babysitter to astrophysics equations (Starcore, 800/708-7827).

**MOREINFO** This integrated contact manager lets you link names, dates, addresses, and E-mail addresses and put together a contact log. Another package, PowerNames, lets you access frequent contacts quickly. MoreInfo is priced at $59; PowerNames costs $20 (SilverWARE, 508/521-5262).

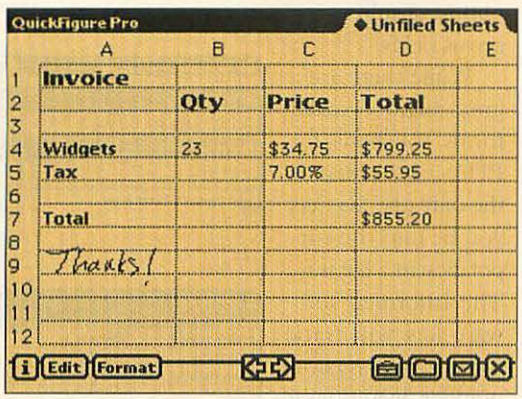
**GULLIVER** This $49 Newton 2.0–savvy product for frequent fliers provides itinerary management and other travel help. Out of Pocket, $59 (bundled with Gulliver, $89), is a Newton 2.0–based expense application (True North, 800/846-9278).

## Small-Minded Spreadsheet

**QUICKFIGURE PRO**
*A fast, simple, but savvy spreadsheet.*
$59.95 PelicanWare
800/655-6398

People who carry computers around in their briefcases, hip pockets, or hands are, almost by definition, also interested in speed and ease of use. For such folks, QuickFigure Pro offers a modest, but fast, spreadsheet solution. With an area just a small fraction the size of an Excel worksheet (52 columns by 999 rows, compared to Excel's 255 columns by 16,384 rows), the program makes it easy to enter data. (For fancier formula work, you need to use an entry line.)

QuickFigure Pro offers about 40 financial, statistical, date and time, mathematical, and other functions (including user-defined functions). It supports *if* statements and lets you do row and column lookups. PelicanWare also bundles in tools for sorting, import and export, charting, and matrix manipulations. You can load as few or as many tools as you need, depending on how much memory space you devote to spreadsheet tasks.




**QuickFigure Pro is a small but fast program that can handle most common spreadsheet tasks.**

One of the few Newton 2.0–savvy applications on the market, QuickFigure Pro takes advantage of some improved features, such as the ability to embed a spreadsheet in the Notepad, so that you can manage your worksheets. You can also select and drag a range of cells to another location. You can conveniently move and delete worksheets from the new Newton storage folder without having to launch the application.

Although it's not the full-featured spreadsheet you might get at the desktop, QuickFigure Pro is a handy way to handle most basic spreadsheet activities.

## For Excel-Ophiles

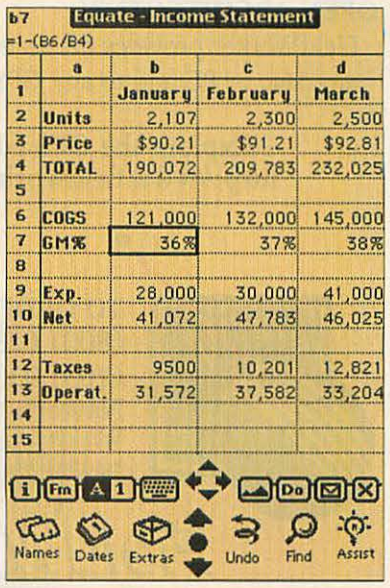
**EQUATE**
*A full-featured, Excel-compatible spreadsheet.*
$99 Holosoft 408/748-9648

If you're seeking full desktop functionality in a PDA application, look no further than Equate, a full-featured, Excel-compatible spreadsheet that runs on a Newton. If you're hooked on Excel and want to do your spreadsheeting in the elevator or while waiting for a table at Joe's Eatery, Equate may be a no-brainer.

Equate supports multiple worksheets of up to 16,384 rows by 255 columns. With more than 50 functions, Equate supports Excel 5.0 workbooks, adjustable column widths, and a formula syntax identical to Excel's. You can enter data and formulas directly into cells or erase them using a scrubbing gesture. There is also an Excel-like entry line at the top of the screen, and a special equation keyboard with a Functions Paste pop-up menu.

You can resize columns by pressing on the boundary between two columns and dragging as in Excel, or you can select ranges by tapping on one cell and dragging to another. When you want to reconcile the palmtop spreadsheet with the Macintosh or Windows Excel version running on your desktop computer, you can do so while retaining cross-platform date formats or other formatting you've done.

Equate packs a lot of wallop in a modest-sized package, but its richness comes at a price: Performance is slow at best. And although the larger feature set and Excel compatibility may be appealing to Excel lovers, Equate may really be too rich for the small diet of most PDAs.




**Equate is a formidable spreadsheet program that gives you all the features of Excel in a handy PDA format.**

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## Forms and Function

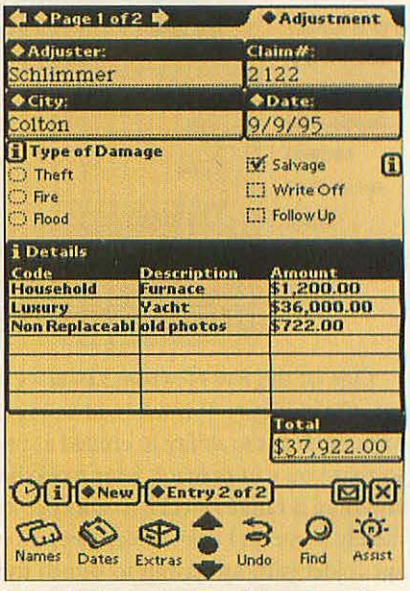
**INFORMED FILLER FOR NEWTON**
*Newton forms client that links to a complete desktop forms management system.*
$149 Shana Corporation
403/433-3690

Business forms—sales orders, inventory records, purchasing requisitions, and so on—are ugly, messy, and expensive, and they stink of bureaucracy. Fortunately, electronic forms software takes a lot of the smell away by providing prefilled, customized information and by automatically routing the electronic forms to the next person in line.

Informed, a long-time staple of electronic forms software for Macintosh computers, now comes in a Newton-flavored version that lets pen computing users fill out and route forms with a minimum of headache. Once you create a form on your Macintosh system (or in 1996, on a Windows client) with Informed, you can download it to your Newton MessagePad so that the forms can hit the street when you do. Inventory personnel, for example, can fill out a form created with Informed, then plug in to a network or use a serial connection and upload their results to a Mac for subsequent processing, routing, authorization, and management by the Guys Upstairs.

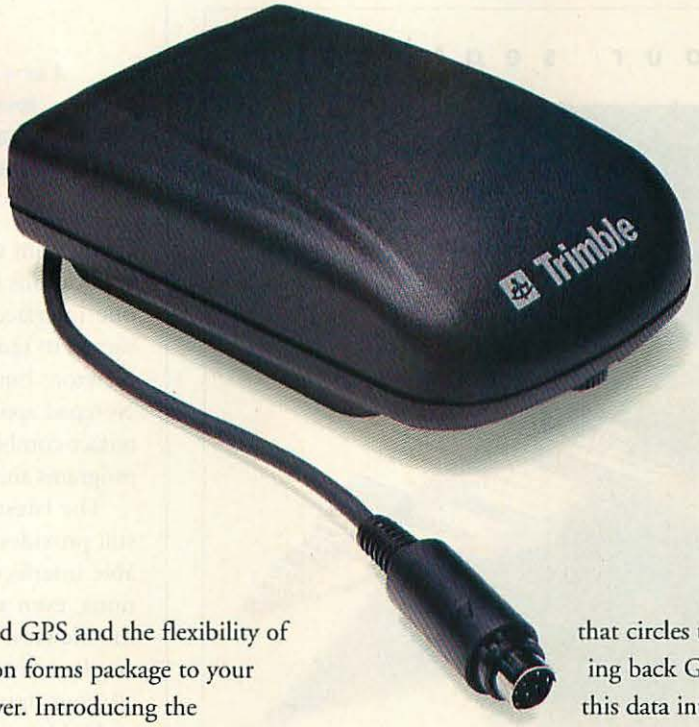
The Informed Filler for the Newton includes support for most Informed data types and features. Forms can have multiple pages, do calculations, and perform error-checking on data that's entered, and the program allows users to search for a form or use the desktop manager to route forms to the appropriate person. Because Informed Filler for the Newton has been optimized for the Newton 2.0 operating system, you can access pop-up calendars for picking dates, times, and phone numbers, or you can use a plug-in keyboard to tab across fields.

While there are a great many so-called forms solutions for PDAs, Informed is the only one that lets you tie into the corporation in a big way. The Informed software lets you track forms by version number, incorporate digital signatures, and even connect to big-gun corporate database management systems such as Sybase and Oracle. Face it—if you have to live with forms, you might as well live Informed.




**Informed Filler for Newton, a Newton-flavored version of the Informed forms package, lets you tie into corporate information systems.**

# Introduce your Newton to the power of Trimble GPS.



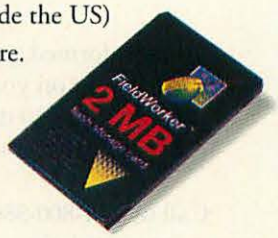

If you're looking to add GPS and the flexibility of a robust data collection forms package to your Newton, the search is over. Introducing the FieldWorker™ software package and the Trimble Mobile GPS™ Locator 110.

Combining your Newton with the Mobile GPS Locator 110 allows you to add time and location data to the information you collect with your FieldWorker software.

The Locator 110 is a compact GPS receiver about the size of a computer mouse, that easily attaches to the Newton's serial port. It even provides its own power source, so it won't drain your Newton's batteries. The Locator provides accurate location data using information gathered from the Global Positioning System (GPS). This system is a constellation of 24 satellites that circles the earth continuously beaming back GPS signals. After converting this data into longitude and latitude readings, Trimble GPS receivers like the Locator 110 can pinpoint locations with precise time.

To find out more about utilizing the power of Trimble GPS, or to order your Trimble Mobile GPS Locator 110, call Trimble direct at 1-800-865-4850.

Call NavTech at 1-800-628-0885 (in the US and Canada) or 1-703-931-0500 (outside the US) and ask for the FieldWorker software.




**Trimble**
THE GPS SOLUTION

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System Requirements: Newton 2.0 O/S (reduced capability with 1.N), The Trimble Mobile GPS Locator 110, and a PC with terminal emulator.

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## Programs on the Horizon

**NOW SYNCHRONIZE** Lets you synchronize Newton Names and Dates files with your Now Contact database and the Now Up-to-Date calendar and scheduling program (Now Software, 800/275-1669).

**FILEMAKER PRO COMPANION FOR NEWTON** Allows users to create forms and capture data from FileMaker Pro 3.0 database records from a Macintosh. To ship next year, it will provide direct synchronization of modified data between the FileMaker Pro Companion database and the desktop or network database. It also allows users to add NewtonScript to fields in the Newton database (Claris, 800/325-2747).

**POWERFORMS** Lets you build forms on Macs, PCs, and Newtons for use on a Newton. Upload and download forms and data with scriptable Mac and PC utilities (HealthCare Communications, 800/888-4344).


Fasten your seatbelt,



Newton is flying **Informed®**

Informed Filler™ for Newton means that your data always gets off the ground. The information you collect is sent straight to your Windows® or Macintosh® form. You can change it, sign it, print it, mail it, or...

Using Informed, your Newton data seamlessly fills in electronic forms, right on your desktop computer. From expense, order or survey forms to those specialty forms unique to your business — whether it's insurance, health care...or flying lessons!

Call us at 1-800-386-7244, and get Informed working for you. Or visit our Web Site at http://www.shana.com to learn more about Informed. Or you contact us directly by email (info@shana.com) or by fax at (403) 437 4381

Shana

Taking forms from the desk to the desktop... and beyond.

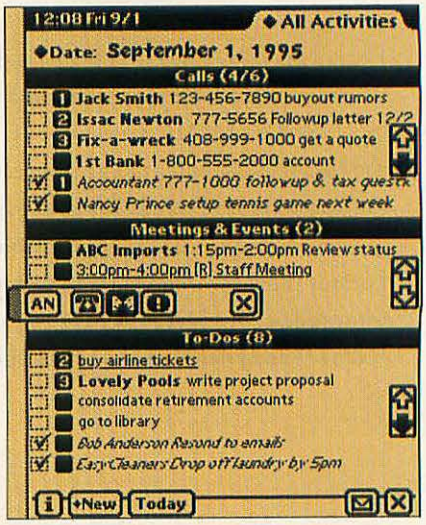
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## A Desktop for All Seasons

**ACTION NAMES**
*A set of packages that enhances the Newton's built-in applications.*
$59.95 Iambic Software
408/985-1723 or 800/730-5370

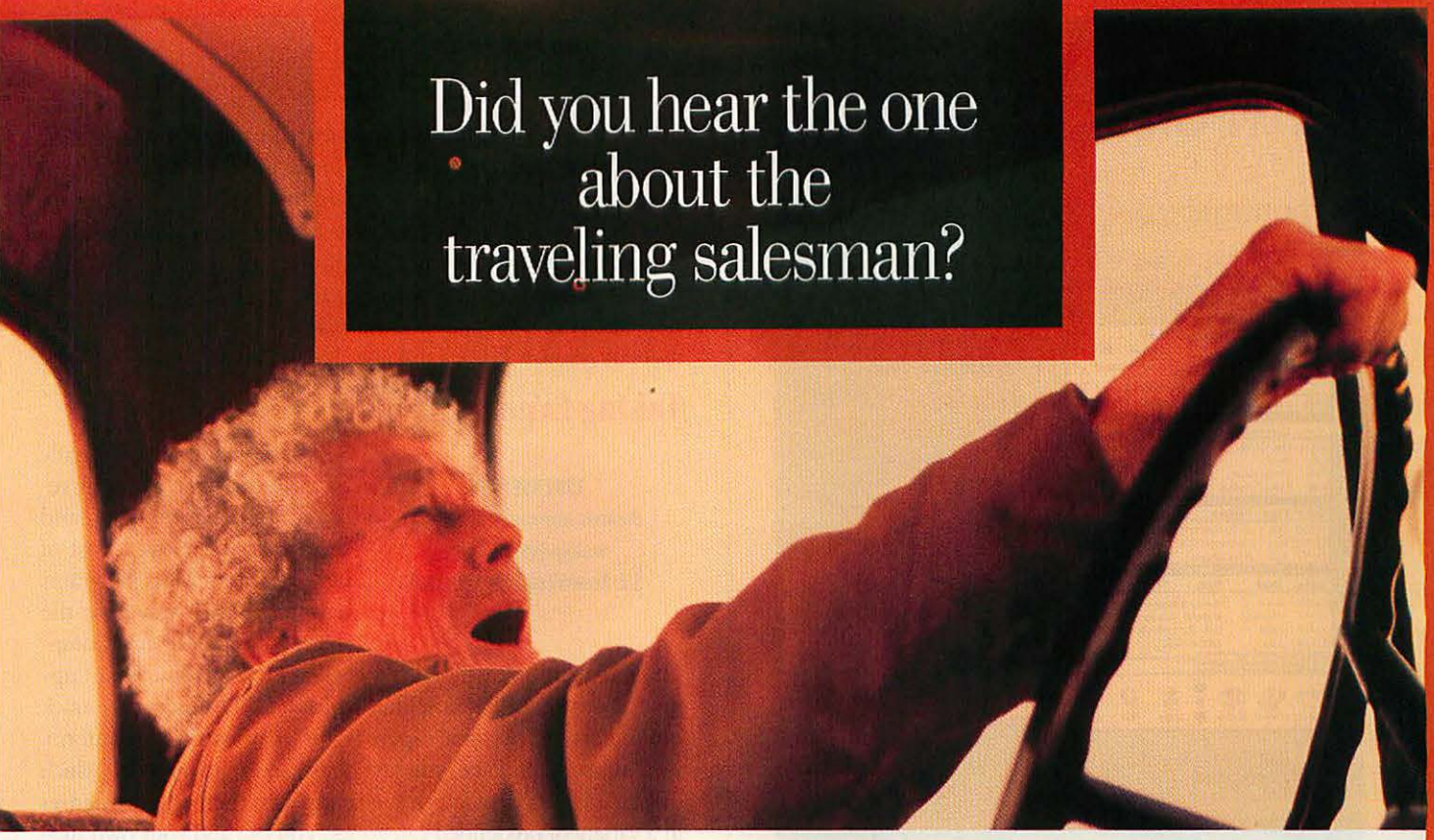
If you want to combine Newton's core applications into one nice, clean all-in-one interface, try Action Names. Designed to radically improve the original Newton built-in Names, Dates, and Notepad applications, this alternative interface combines three different Newton programs and stirs them together.

The latest version of Action Names still provides a simpler, more manageable interface for many Newton functions, even with the improvements to the Newton operating system. For example, a floating toolbar lets you access all your applications, phone numbers and addresses, and other critical information quickly.




**Action Names lets you tie Newton's scattered core applications into a clean, all-in-one interface.**

# Did you hear the one about the traveling salesman?






There's this traveling salesman, Mildred Faber. Midwest sales manager for Kane Communications, Beverage and Rubber Company's Pink Eraser Division. Mistakes are her business. She's spent her life convincing people that they're nothing to be ashamed of. "What do you think erasers were invented for?" she says, in a gravelly contralto.

"I swear, I'd be up the *creek* without Gulliver's itinerary!"

Mildred is the top sales performer of the division (1982-present). She has some help — her Newton,® loaded with Gulliver® and Out of Pocket.™ Gulliver and Out of Pocket help her handle all of those annoying travel details that used to make her feel like she was biting off more than she could chew. Hotel reservations, itineraries, flight schedules, expense documentation.



"Expense reports? With Out of Pocket they're *painless*, honey."

Now everything's in her Newton. Gulliver is the reason that Mildred is no longer late for her appointments with Frank, the fussy CPA in Grand Rapids. While he piles his seven No.80 Kane SpeedErase Specials in a neat row on his desk, Mildred schedules their next quarterly appointment. And her Gulliver instantly reminds her of the Tax Preparers' Banquet and Exposition in Flint that very day. "I wouldn't want to miss that one, doll." She's also reminded of her hotel reservation, along with her flight and rental car information. And because she sends her itinerary directly from her modem, her assistant knows where she is and how to reach her all the time. So do her grandchildren. "You never know who needs to talk to Grams," says Mildred. Out of Pocket lets her keep track – with just one self-assured tap – of every stop she makes at Stuckey's, every mile she logs on her faithful Chevy Sierra, and every cup of coffee (ten a day, black) she buys on the way to the next stop. Another tap and she prints out impeccable expense reports, with each purchase and expense instantly categorized and totaled.




"You'll get down on your knees and thank *God* these products exist!"

Reducing work and keeping organized are the best things about Gulliver and Out of Pocket, says Mildred. Plus, they give her time to indulge in her favorite pastime – listening to original cast recordings of Broadway musicals. "I feel pretty-y-y-y," Mildred belts out as Chita Rivera joins in on the road to Dubuque.

**True North**
*Managing your world.*

**Order your own!**
Call 1-800-846-9278 or 1-603-886-2756 / Gulliver $49 / Out of Pocket $59 / Bundle $89

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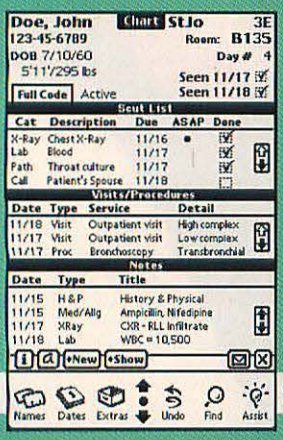

**Gulliver 2.0:**
Provides itinerary management, frequent flyer information, travel vendor database, and automated Newton localization. Can enter flight, hotel and car rental information via optional companion desktop application. Newton OS 2.0 compatible.

**NEW! Out of Pocket:**
Provides full support for client/project/trip tracking, budgets, meal and entertainment documentation, and foreign currency exchange. Plug-in expense report formats provided, and extensive support for exporting expenses to desktop finance and accounting packages. For Newton OS 2.0.

**"Gulliver succeeds where others have failed." – Pen Computing Magazine**

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Don't waste time— call today!

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An Overview feature lets you view all your meetings, to-dos, and calls on one screen. Action Names comes with all kinds of other nice-to-have features, such as a tool that lets you file meetings or other activities in different folders, delete agenda items by scrubbing, associate notes with names, view a contact history for people in your Names file, and much more. Though the new Newton 2.0 goes a long way toward improving PDA usability, Action Names still goes it one better.

## Taking Expenses to Go




Software vendors have finally figured out that expense reports are long on pain and short on gain. Now a host of new PC and Mac programs have made their way onto the shelves of Egghead and CompUSA. Not to be outdone, PowerWare has introduced an upgraded version of ExpensePlus, which lets PDA users keep track of business and personal expenses, for the Newton 2.0 platform.

To use the package, you first define an expense report (which can be a trip, a project, or anything else) then enter expenses in a variety of predefined categories. You can add your own subcategories in the Miscellaneous category, and you can also define folders for different types of related expenses.

The program has many shortcuts for business travelers. For instance, when you enter lodging, it asks you how many nights you stayed and creates a separate expense slip for each night. It also calculates mileage expenses, checks per diem limits in specific expense categories, and does foreign currency conversions.




**PowerWare's ExpensePlus is an expense reporting package that helps take the pressure off end-of-the-month reporting.**

ExpensePlus doesn't have a lot of report options, but the summary and detail reports it includes are fairly adequate and can be sorted by category. You can also upload your current expenses into Excel on a desktop Macintosh or PC to format it in your corporation's style. And although ExpensePlus doesn't have all the bells and whistles of a desktop spreadsheet, what it does, it does well.

*Steve Mann (dsi@cdigital.com) is publisher and editor of* PDA Developers, *a bimonthly journal for PDA software developers.*

# Bringing back that great, fresh image has simply never been simpler.




It's no wonder that office equipment users around the world have turned to the Canon Cartridge, choosing cartridge-equipped laser beam printers, plain paper faxes, personal copiers and image filing systems. Because the Canon Cartridge contains not only fresh toner, but also a new drum, replacing the old cartridge with a new one restores the image you put on paper to the fresh, crisp quality you want. The all-in-one cartridge is simple to replace. It's totally self-contained, so your hands will stay clean as well. Plus, Canon has created a system that accepts used Canon Cartridges returned from around the world. Now, when you replace your Canon Cartridge, you not only get a fresh, clean image. You can, if you will lend a hand, also get a cleaner world.



## All it takes is the all-in-one, user-replaceable Canon Cartridge.

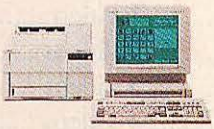
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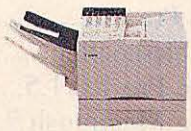
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| Claris Works 4.0 | 7 videos | ☐ |
| CorelDRAW 5.0 | 6 videos | ☐ |
| CorelDRAW 4.0 | 6 videos | ☐ |
| Creating Networks | 1 video | ☐ |
| Desktop to Pre-Press | 2 videos | ☐ |
| Design & Layout | 1 video | ☐ |
| Digital Chisel 1.2/2.0 | 1 video | ☐ |
| Director 4.0 | 5 videos | ☐ |
| Excel 5.0 | 5 videos | ☐ |
| FileMaker Pro 2.1 | 4 videos | ☐ |
| FreeHand 5.0 | 6 videos | ☐ |
| 4th Dimension 3.0 | 6 videos | ☐ |
| HyperCard 2.3 | 4 videos | ☐ |
| Illustrator 5.0/5.5 | 5 videos | ☐ |
| Infini-D 2.5/2.6 | 2 videos | ☐ |
| Integrating Programs | 1 video | ☐ |
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| Mac P & L 4.0 | 3 videos | ☐ |
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| Mac Troubleshooting | 3 videos | ☐ |
| MacWrite Pro 1.0/1.5 | 3 videos | ☐ |
| Mastering Macintosh 7.1/7.5 | 4 videos | ☐ |
| Mastering the Internet | 1 video | ☐ |
| Microsoft Works 4.0 | 5 videos | ☐ |
| MiniCad 5 | 2 videos | ☐ |
| Nisus Writer 4.0 | 4 videos | ☐ |
| Norton Utilities 3.1 | 1 video | ☐ |
| Now Contact 3.5 | 1 video | ☐ |
| Now Up-to-Date 3.5 | 1 video | ☐ |
| Now Utilities 5.0 | 1 video | ☐ |
| PageMaker 6.0 | 7 videos | ☐ |
| Painter 3.0 | 4 videos | ☐ |
| Persuasion 3.0 | 2 videos | ☐ |
| Peachtree Accounting 2.0 | 3 videos | ☐ |
| Photoshop 3.0 | 10 videos | ☐ |
| PowerPoint 4.0 | 2 videos | ☐ |
| Premiere 4.0 | 3 videos | ☐ |
| QuarkXPress 3.3 | 4 videos | ☐ |
| Quicken 5.0 Personal | 2 videos | ☐ |
| Quicken 5.0 Business | 2 videos | ☐ |
| QuickTime 1.6/2.0 | 1 video | ☐ |
| SuperPaint 3.5 | 3 videos | ☐ |
| Using America Online | 1 video | ☐ |
| Using CompuServe | 1 video | ☐ |
| Using Fonts | 1 video | ☐ |
| Using PowerBooks | 2 videos | ☐ |
| Utilities, CDEVs, Inits | 1 video | ☐ |
| Windows 95 | 4 videos | ☐ |
| Word 6.0 | 6 videos | ☐ |
| WordPerfect 3.1/6.1 | 6 videos | ☐ |

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Circle 106 on reader service card

EDITED BY MARJORIE BAER

# Maddening Mail-Order

*The saga of SuperMicro*

EACH YEAR, *CONSPICUOUS CONsumer* receives hundreds of complaints about computer companies. Normally, it's kind of a steady trickle, so when complaints about a single company start arriving in torrents, we know something's up.

Robert Passananti of Irvine, California, had never owned a Mac until he bought one from SuperMicro of Torrance, California, having seen an ad for SuperMicro in the September 1995 *Macworld.* A sales rep at the company told him that a Power Mac 9500/132, a 20-inch monitor, a graphics card, and extra RAM would cost $7500, including delivery—$96 less than the price CompUSA quoted to Passananti. "I sent them a cashier's check for $7500—that's what they asked for—and the sales rep told me I would get the computer 24 hours later," Passananti said.

Three days later, nothing had arrived. "They kept saying, 'It's in the mail, it's in the mail,' and I asked for a tracking number, and they kept telling me their computer was down," Passananti said. Frustrated and worried about his $7500, Passananti drove the 40-odd miles from his home to SuperMicro's offices, where he was told that the company could not sell him the products he had ordered for the price he'd paid. Instead, SuperMicro canceled the order and promised him a refund check by mail.

"They cashed the check on Wednesday, and on Friday, they tell me the order's canceled. Why'd they cash my check?" Passananti asked. His next step was to hire a lawyer and file a report with the Torrance Police Department.

## The Vendor's View

Passananti's complaint is one of over 40 we have received about SuperMicro so far this year—the majority of them arriving after a two-page ad for the company ran in the September *Macworld.*

The complaints vary, but a few themes arise. Several readers say they were quoted one price and, after sending a check, were told they needed to send more money—often several hundred dollars above the original quote—before the item would ship. Others tell of receiving nonfunctional items and being charged a testing fee after returning them. Still others say the product they received was different from the one they ordered.

When *Macworld* questioned Brad Kad, SuperMicro's sales manager, he attributed customers' dissatisfaction to their own failure to follow company policies, which, he said, are clearly stated by SuperMicro's voice-mail system. The company caters to high-end users, he said, and smaller customers don't follow SuperMicro's procedures. "It's always the $400 orders that people scream and rant about," Kad said. "They do get their money back—they just have to listen to the policies. . . . If they can't, they're not my customer."

Kad said he sometimes gives customers a price that SuperMicro's accounting department later rejects. "I'll tell the customer I'll do the best I can to get it through accounting, but accounting might kick it back. It's not a firm quote. All prices are subject to change." Kad said he never simply cancels a customer's order, as Passananti's claims. If he can't negotiate a satisfactory solution with the customer, Kad said, he'll offer to cancel the deal and refund the money.



## Particular Payment Policies

Most readers who've written to us about SuperMicro used a cashier's or company check for their order. *Macworld* always recommends paying with a credit card, since credit card companies often help customers resolve disputes. But because of past experiences with fraudulent cards, SuperMicro currently accepts only company, personal, or cashier's checks. It also has a policy of cashing checks before mailing the merchandise, because, Kad explained, "[some] people will put a stop payment on a check when the goods have been delivered."

How often do merchants get burned by fake credit cards? According to Allan Trosclair, vice president of fraud control for Visa USA, that problem represents a mere 0.01 percent of Visa's overall sales volume of $290 billion. Trosclair says Visa takes care to prevent fraud in mail-order transactions. "The merchant gets the card number, expiration date, bill-to address, and he should get a phone number. People who are trying to defraud often give a wrong phone number." The merchant can call the number to verify its validity. Trosclair adds that Visa's computer system monitors authorization requests and can detect unusual patterns. "It's been beneficial to both merchants and cardholders," he says.

Charges for returned items also angered readers. According to Kad and the company's credit department information line (310/782-5969), SuperMicro tests all products before shipping them. "If our engineers test it and it tests bad, they'll have a new product within 72 hours," Kad told *Macworld.* A customer who receives a defective product should call for instructions on how to return it. SuperMicro charges a 15 percent restocking fee for returned products that have been opened, and returned Apple and DSC (SuperMicro's own brand) items are subject to a $50 testing fee. Products returned after 30 days may be subject to a depreciation charge.

*continues*

### Unwelcome Surprises

David Averett of Salt Lake City was wary of mail order, but he couldn't pass up SuperMicro's prices. Averett paid $245 for a 730MB Quantum internal hard drive, but what he got was a 540MB Quantum drive that was dead on arrival. After returning the product, he received a refund for $175. SuperMicro had kept $70 for testing the drive, he was told—and found it in good condition.

What really irked Averett was that the salesperson had promised him a factory-sealed 730MB Quantum drive. When the wrong drive came, he promised another one. Eventually, SuperMicro elected to cancel the order and send the partial refund. (Averett also collected $70 from Federal Express for his damage claim.)

Chip Seide of Acworth, Georgia, paid SuperMicro $610 COD for a Fujitsu DynaMO 230 magneto-optical drive. He opened the box and found what seemed to be "a very large and heavy DSC drive with a paper label glued to the outside of the case with the name Fujitsu 230 megabyte optical drive." Seide wrote to SuperMicro. "The next time I pay via COD I'm [first] going to open the box and make sure I've got what I wanted," he said. In fact, SuperMicro sold the Fujitsu mechanism inside a DSC case, but Seide should have been informed of that up front. Many other readers reported similar experiences.

### Consumer Agencies Come Calling

At press time, the Better Business Bureau of the Southland (909/825-7280; **http://www.igc.apc.org/cbbb/**) had received 28 complaints about SuperMicro and rated the company as having an unsatisfactory business-performance record.

The bureau's report describes "a failure to eliminate the basic cause of complaints alleging difficulty obtaining adjustments for defective merchandise or misrepresentation of costs of shipping and delivery dates"—similar to the reports that readers sent *Macworld*. "The company responded to some complaints by making adjustments it deemed appropriate," the report continues, "in some cases denying allegations and deducting testing charges, claiming the merchandise tested good. Customers were not always satisfied with this response. Several complaints remain unanswered."

Asked about the rating, Kad seemed unconcerned. "The Better Business Bureau means nothing. It's not a credit rating. People can check with the Better Business Bureau, but we don't take people's money [improperly]."

Detective Randy Kjenstead of the Torrance Police Department told us he had received enough complaints about SuperMicro that he began looking into the company. After meeting in August with Kad and Jeff Goldfield, SuperMicro's CEO, Kjenstead told *Macworld* that while he didn't applaud SuperMicro's way of doing business, "I don't think they're doing anything illegal that the police department will get involved in." The U.S. postal inspector in Southern California has also received complaints but was not investigating them at press time.

### Read the (Very) Fine Print

While SuperMicro appears to operate lawfully, its current policies do not serve the average consumer well. That is the company's choice. But the deluge of complaints about an advertiser caused Steve Plevin, our director of telesales operations, to contact SuperMicro. In response to Plevin's request that SuperMicro explain its policies in its advertisement, a revised ad appeared in the November issue of *Macworld*. We'll keep you posted.

—JOANNA PEARLSTEIN

### SERVICE HERO

Val Vonheeder of Palm Bay, Florida, says MacWarehouse deserves accolades for its customer support.

When Vonheeder's fax modem stopped working properly, he called MacWarehouse's toll-free order line. John, a service technician, helped test the modem using Vonheeder's telecommunications software.

"John didn't make me feel like a ditz for being incompetent with AT codes, which he helped me use to manipulate the fax modem using good ol' ZTerm," Vonheeder writes. "John took a genuine interest in my problem, never seemed to rush me along, and readily agreed with me that fax modems ought to be easier to use and test."

Not getting the treatment you deserve? Or have you received heroic service? Write to the *Conspicuous Consumer* department at *Macworld*, 501 Second St., San Francisco, CA 94107; send us a fax at 415/442-0766; or E-mail us at **macworld@macworld.com**. Look for us on America Online and eWorld (keyword **Macworld**) and on the World Wide Web (**http://www.macworld.com**).

Assistant editor JOANNA PEARLSTEIN writes about Internet and consumer issues and shares responsibility for *New Products*.


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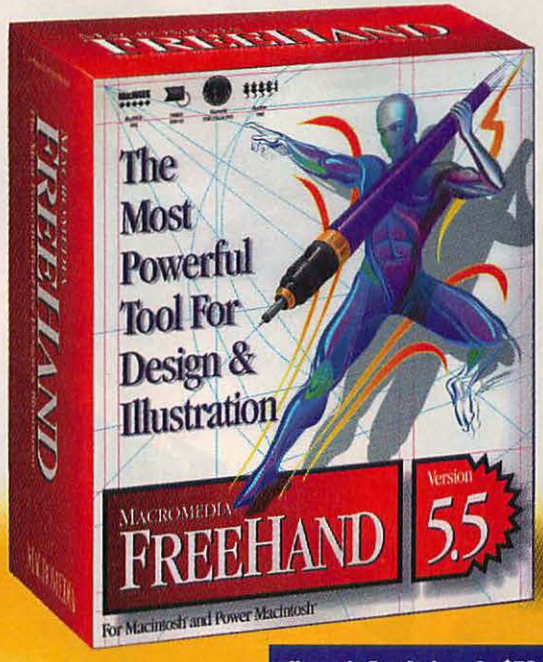
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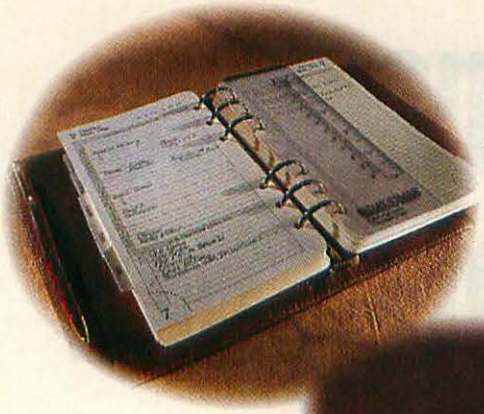

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# Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

**Edited by Patricia Carberry-Harris**

*Macworld Editors' Choice* is a complete listing of the hardware and software products selected as the best of their type in *Macworld*'s comparative articles. A ❖ next to a product indicates that we chose more than one product in that category. A ◀ next to a product listing indicates that a native Power Mac version is available.

## Hardware

### DIGITAL RECORDING AND EDITING

**HARDWARE/SOFTWARE PACKAGES, Dec 95**
**Low-End:** Audiomedia II; Digidesign, 415/688-0600; $1295.
**High-End:** Pro Tools III Core System; Digidesign, 415/688-0600; $6995 (excluding required interface).

### MONITORS

**17-INCH MONITORS, Oct 95**
17B; Philips Consumer Electronics, 800/835-3506; $899.

**SMALL COLOR MONITORS, Jan 94**
**14-inch display:** ❖ Sony CPD 1430; Sony Corp. of America, 800/222-7669; $779.95.
❖ Nanao FlexScan F340i•W; Nanao USA, 800/800-5202; $799.
**15-inch display:** NEC MultiSync 4FGe; NEC Technologies, 708/860-9500; company's estimated price $755.

**TWO-PAGE COLOR MONITORS, Nov 94**
PressView 21 Display System; SuperMac Technology, 408/541-6100; $3999.

### NETWORK HARDWARE

**REMOTE-ACCESS SERVERS, Oct 94**
**Mixed networks:** NetConnect Remote Access Server; Asanté Technologies, 408/435-8401; $3899 for eight ports.
**AppleTalk networks:** ARA Multiport Server; Apple Computer, 408/996-1010; four ports $1799, eight ports $3298.

### PRESENTATION HARDWARE

**PORTABLE PRESENTERS, Jan 95**
Z115; nView, 804/873-1354; $5495.

### PRINTERS

**COLOR BUSINESS PRINTERS, Sep 95**
Tektronix Phaser 340; Tektronix, 503/682-3411; $5590.

**DYE-SUBLIMATION PRINTERS, Jul 94**
**Prepress proofing—tabloid size/fastest:** Phaser 480; Tektronix, 503/682-7377; $14,995.
**Prepress proofing—tabloid size/most complete:** Rainbow; 3M, 612/733-1110; company's estimated price $20,000.
**Prepress proofing—letter size:** ProofPositive Full Page; SuperMac Technology, 408/541-6100; $7999.
**General publishing and business:** Phaser IISDX; Tektronix, 503/682-7377; $9995.

**PERSONAL PRINTERS, Sep 94**
**Ink-Jet:** DeskWriter 520; Hewlett-Packard, 800/752-0900; $365.
**Laser—$1000 to $1600:** microLaser Pro 600; Texas Instruments, 214/995-6611; $1599.

**WORKGROUP PRINTERS, Jun 95**
**Tabloid-size printers:** LaserJet 4MV; Hewlett-Packard, 208/323-2551; $3549.
**Legal-size printers:** ❖ Optra Lx; Lexmark, 606/232-2000; $3298.
❖ LaserWriter 16/600 PS; Apple Computer, 408/996-1010; company's estimated price $2299.

### SCANNERS/IMAGE CAPTURE

**PROFESSIONAL REAL-TIME FILMLESS CAMERAS, Sep 95**
Fujix DS-515/Nikon E2; Fuji, 914/789-8100; Nikon, 516/547-4200; $12,780; with optional lens and PC Card $14,140.

**HIGH-BIT FLATBED COLOR SCANNERS, Mar 95**
❖ Arcus II; Agfa, 508/658-5600; $3495.
❖ PowerLook; Umax, 510/651-8883; $3495.

**LOW-COST COLOR SCANNERS, Nov 93**
**$1300 to $1600:** Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.
**Under $1300:** Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

**OCR, Nov 93**
OmniPage Professional; Caere, 408/395-7000; $995. ◀

### SYSTEMS/STORAGE

**1.3GB OPTICAL STORAGE, Dec 94**
**Best low-cost solution:** 1.3Gig MO; Club Mac, 714/768-8130; $2099.
**Best overall performance:** Genesis 1300; Microtech, 203/468-6223; $2899.

**DOS/WINDOWS CARDS, Sep 95**
**Most 040 Macs:** DOS on Mac; Reply, 408/942-4804; 50MHz model $590; 66MHz model $690.
**Most Power Macs:** OrangePC Model 220; Orange Micro, 714/779-2772; $1217 direct price.
**Occasional Windows Access:** Timbuktu; Farallon Computing, 510/814-5100; $199 per user.

**HIGH-PERFORMANCE DRIVE SYSTEMS, Jul 95**
**Accelerator card:** SiliconExpress IV; Atto Technology, 716/691-1999; $995.
**Drive mechanism:** IBM UltraStar series; IBM (available from several resellers); prices vary by reseller.

**QUAD-SPEED CD-ROM DRIVES, Jun 95**
APS T3501; APS Technologies, 816/483-6100; $299.95.

**RAID STORAGE SYSTEMS, Apr 95**
**RAID 3 or 5:** MR/5 RAID; MegaDrive Systems, 310/247-0006; $18,840.
**RAID 0:** ❖ Joule RAID; La Cie, 503/520-9000; $1999.
❖ DisKovery 8200W; Optima Technology, 714/476-0515; $7790.
❖ SledgeHammer 2000FMF; FWB, 415/474-8055; $2359.

**SYSTEM UPGRADES, Feb 95**
**Upgrade for Macintosh Quadra 650, 800, or 950:** Power Macintosh Upgrade Card; Apple Computer, 408/996-1010; $699.
**Upgrade for other 680X0 Macs:** Replace with Power Macintosh 6100/60 with CPU booster and cache card. Power Macintosh 6100/60; Apple Computer, 408/996-1010; $1819 (base system with 8MB of RAM). PowerClip (CPU booster); Newer Technology, 316/685-4904; $245. 256K cache card; various companies; roughly $200.

### VIDEO/DISPLAY

**24-BIT VIDEO CARDS, Apr 94**
**Inexpensive acceleration:** PrecisionColorPro 24XP; Radius, 408/434-1010; $599.
**Full-featured acceleration:** Thunder II GX•1360; SuperMac Technology, 408/541-6100; $4499.

**DIGITAL-VIDEO BOARDS, Aug 95**
SpigotPower AV; Radius, 408/434-1010; $999.

*continues*

# MACWORLD Editors' Choice

HIGH-END VIDEO EDITING, Jun 94
**Presentation video:** ❖ MoviePak2 Pro Suite; RasterOps, 801/785-5750; $4199. ❖ VideoVision Studio; Radius, 408/434-1010; $4499.
**Corporate video (offline):** Media Composer 400s; Avid Technology, 508/640-6789; $14,995.
**Corporate video (online):** VideoCube; ImMix, 916/272-9800; $40,500.

PHOTOSHOP ACCELERATORS, Apr 94
PhotoBooster; Radius, 408/434-1010; $999.

## Software

### ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
**Small-business system:** M.Y.O.B.; Best Ware, 201/586-2200; $199.
**Home office/personal finance:** MacMoney; Survivor Software, 310/410-9527; $119.95.

### BUSINESS TOOLS

PORTABLE-DOCUMENT SOFTWARE, Apr 95
**Document Distribution:** Common Ground 1.1; No Hands Software, 415/802-5800; $189.95.

STATISTICS, Oct 93
**Exploratory data analysis:** DataDesk 4.1; Data Description, 607/257-1000; $595.
**Comprehensive package:** SYSTAT 5.2.1; SYSTAT, 312/329-3500; $895.

### COMMUNICATIONS/NETWORKS

COMMUNICATIONS SOFTWARE, Aug 94
**Basic connectivity:** ZTerm; David P. Alverson (no phone number available); $30.
**Terminal emulation:** Crosstalk for Macintosh; Digital Communications Associates, 404/442-4000; $195.
**Internet exploration:** VersaTerm; Synergy Software, 215/779-0522; $125.

DOS WINDOWS EMULATION, Oct 94
Timbuktu Pro 1.0.3 for Macintosh, Timbuktu 1.1 for Windows; Farallon Computing, 510/814-5000;$199 each.

INTERNET BROWSERS, Oct 95
Netscape Navigator; Netscape Communications, 415/528-2555; $39.

PROTOCOL ANALYZERS, Jul 94
EtherPeek; AG Group, 510/937-7900; $795.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

### DIGITAL RECORDING AND EDITING

SOFTWARE-ONLY PRODUCT, Dec 95
Deck II; OSC, 415/252-0460; $399.

### GRAPHICS

3-D MODELING, Dec 94
**Stand-alone modeler:** formZ; autodessys, 614/488-9777; $1495.
**Integrated-modeling package:** Strata StudioPro; Strata, 801/628-5218; $1495.
**Entry-level modeler:** Infini-D; Specular International, 413/253-3100; $695.

CLIP ART'S GREATEST HITS, Jan 94
**Overall collection:** ❖ ClickArt Studio Series; T/Maker Company, 415/962-0195; $99.95 per volume.
❖ Electronic Clipper subscription service; Dynamic Graphics, 800/255-8800; $67.50 per month.
❖ Images with Impact series; 3G Graphics, 800/456-0234; $99.95 to $129.95 per volume, CD-ROM $499.
❖ Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; $74.95 per volume, CD-ROM $149.95.
❖ Typographers' Ornaments; Underground Grammarian, 609/589-6477; $25 per volume; ten TIFF albums $200; EPS volumes $50 each.

FONT BUYERS' GUIDE, Mar 94
**Text-face collection:** Type On Call CD-ROM; Adobe Systems, 415/961-4400; $99 (this price includes the ability to unlock two families from preselected packages); an additional $25 enables you to unlock individual faces, or $69 to $179 for unlocking families.
**Display/decorative-face collection:** Fontek; Letraset, 201/845-6100; $39.95 per face.
**Bargain collection:** Monotype ValuePack; Monotype, 312/855-1440; $89 for 57 fonts.

IMAGE DATABASES, Oct 93
❖ Aldus Fetch 1.0; Adobe Systems, 206/628-5739; $295.
❖ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

IMAGE EDITORS, Feb 95
Adobe Photoshop 3.0; Adobe Systems, 415/961-4400; $895.

### INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Nov 95
ClarisWorks 4.0; Claris, 408/727-8227; $129.

### ONLINE SERVICES

ONLINE SERVICES, Aug 94
**E-mail:** America Online; America Online, 703/893-6288; basic monthly fee $9.95.
**Reference:** CompuServe; CompuServe Information Service, 614/457-0802; basic monthly fee $8.95.

Vendors: Please write to *Macworld Editors' Choice*, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.

### ORGANIZATION/PRODUCTIVITY

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3 3.0.4; DeltaPoint, 408/648-4000; $195.

SALES-AUTOMATION SOFTWARE, Oct 93
❖ Contact Ease; WestWare, 619/274-5053; one user $395, five users $1495.
❖ CBS; Colleague Business Software, 512/345-9964; $495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
**Small system:** On Location; On Technology, 617/374-1400; $129.
**Multiuser system:** Personal Librarian; Personal Library Software, 301/990-1155; $995.

### PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Adobe Systems, 206/622-5500; $495.

### UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
**Application-independent document distribution:** Common Ground; Common Ground Software, 415/802-5820; $189.95.
**Book-length documents:** FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
**PC-printer cable packages:** PowerPrint; GDT Softworks, 604/291-9121; $149.

VIRUS KILLERS, Jul 94
**Commercial software:** Virex; Datawatch, 919/549-0711; $99.95.
**Free software:** Disinfectant; free from various online services.

### VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, Jun 94
**Virtual memory software:** Virtual 3.0; Connectix, 415/571-5100; $99.
**Memory-boosting software:** RAM Doubler 1.0.1; Connectix, 415/571-5100; $99.

### WORD PROCESSORS

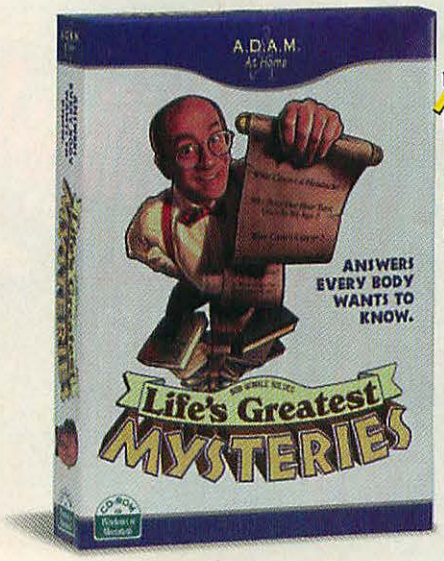
HIGH-END WORD PROCESSOR (for fast 68040 Macs and Power Macs), Mar 95
Microsoft Word 6.0; Microsoft, 206/882-8080; $325.

LOW-COST WORD PROCESSOR, Mar 95
MacWrite Pro; Claris, 408/727-8227; $99.

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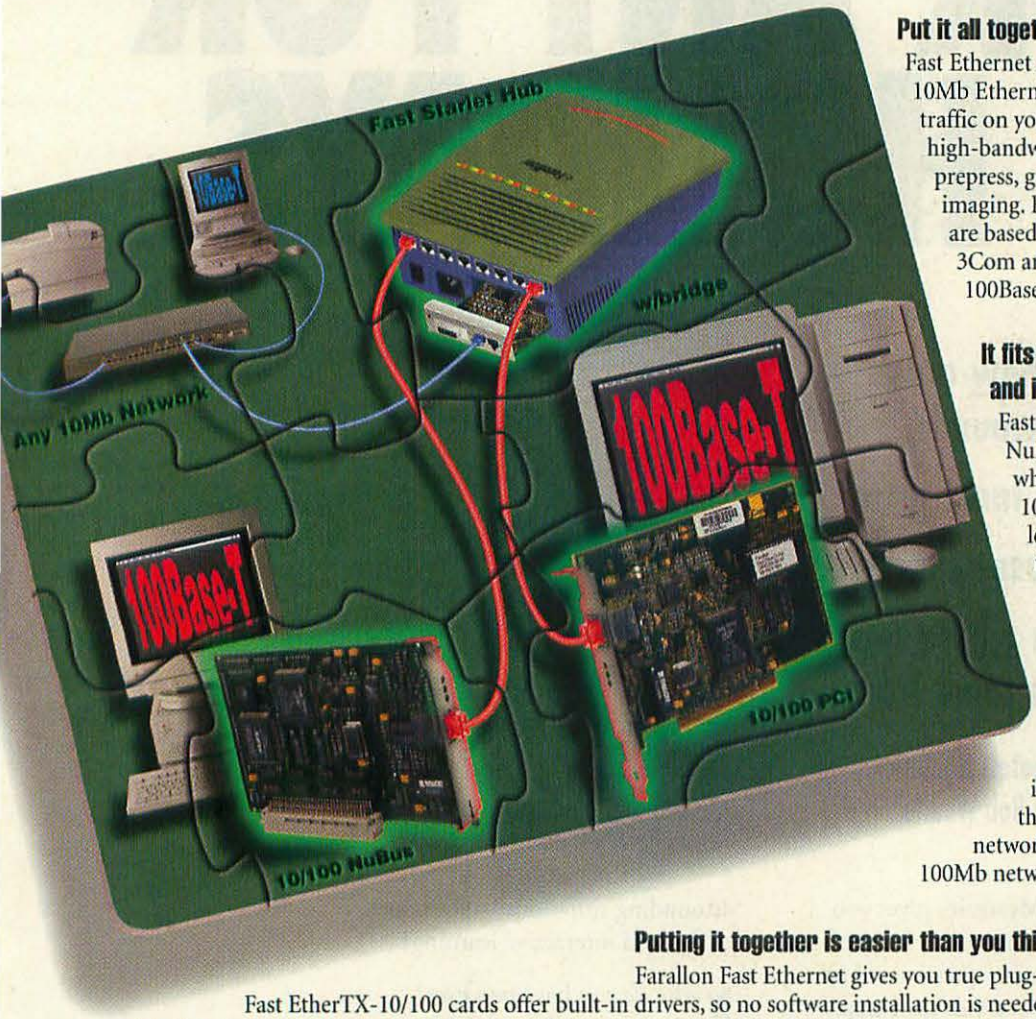
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# Star Ratings

HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

Edited by Wendy Sharp

*Macworld Star Ratings* lets you compare Macintosh products by providing summaries of *Macworld*'s authoritative product reviews from the past year. The number of stars indicates quality; our reviewers assign five stars to outstanding products and one star to poor ones. The ◀ symbol indicates that a product is available in a native Power Mac version.

If a product has been upgraded since our last review, the most recent version number supplied by the vendor appears in parentheses after the reviewed version number. To read a full review of any product in the listing, please consult the issue listed at the end of each synopsis.

Vendors: Please write to *Macworld Star Ratings*, 501 Second St., San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

## Software

### BUSINESS TOOLS

★★ **Adobe Acrobat 2.0, Adobe Systems, 415/961-4400, $195.** The font fidelity of this portable-document software is uneven, and the software demands too much in resources compared with other options. Mar 95

★★★ **Adobe Acrobat for Workgroups 2.0, Adobe Systems, 415/961-4400, $1595.** As a collaboration tool, this software is inexpensive and offers well-done annotation tools. However, it's resource-intensive, and creating hypertext documents with it isn't easy. Mar 95

★★★★ **BizPlan Builder 5.0, Jian, 415/254-5600, $129.** To create a comprehensive business plan, just fill in the blanks in this easy-to-use spreadsheet/word processor template. Jun 95

★★★ **Business Plan Writer 6.0, Graphite Software, 301/984-1100, $99.** This proposal-writing template can help entrepreneurs create a detailed business plan, but—unlike the competition—it won't help them format an attractive presentation. Jun 95

★★★ **CA-Cricket Graph III 1.52 (1.53), Computer Associates International, 516/342-5224, $129.** Graphing software's features are just right for charts in the physical and social sciences, but they lack pizzazz. Dec 94 ◀

★★★★ **ClarisWorks 3.0, Claris Corp., 408/727-8227, $129.** Inexpensive, easy to use, and powerful integrated software is the best package available. It's far better in terms of features, speed, integration, and use of system resources than its competition. Feb 95 ◀

★★★ **Equate 1.0, Holosoft, 408/748-9648, $99.** Newton spreadsheet allows you to import Microsoft Excel files, but you'd have to be very patient to set up standalone worksheets. Oct 95

★★★★ **Helix Express 3.03, Helix Technologies, 708/465-0242, $589.** Latest release of this visually-oriented database adds speed and features—including conditional branching capabilities and improved forms-drawing tools—without raising RAM requirements. Sep 95

★★★ **InfoDepot 2.0 (2.3), Chena Software, 610/770-1210, $295.** Project-planning program includes tools for brainstorming and organizing ideas; scheduling project steps; and entering, calculating, and presenting data. It does a good job but has some flaws. Jan 95

★★★★ **MapInfo 3.0, MapInfo, 518/285-6000, $1295.** Versatile mapping program lets you geocode the geographical data in a database, conduct spatial analyses, and create presentation graphics. Oct 95 ◀

★★★★ **MarcoPolo 3.0, Mainstay, 805/484-9400, $895.** Full-featured document-management system is significantly improved. The addition of OCR makes it very usable. Jan 95

★★★★ **Microsoft Excel 5.0, Microsoft Corp., 206/882-8080, $339.** Although the feature set of this Power Mac spreadsheet is stunningly rich, the system requirements for a full install are jaw-dropping. Jan 95 ◀

★★★ **Microsoft Works 4.0, Microsoft Corp., 206/882-8080, $99.95.** Integrated package is a sensible, low-cost choice. It offers a respectable word processor, database, spreadsheet, calendar, and address book, as well as a slide-show module, and drawing and communications tools. Jan 95 ◀

★★★ **PhoneDisc 95 PowerFinder, Digital Directory Assistance, 617/639-2900, $249.** Now, where did you put Aunt Ida's phone number? Never mind, it's on this CD-ROM telephone directory (assuming the dear old thing doesn't have an unlisted number). Oct 95

★★★ **Phyla 1.0.3, Mainstay, 805/484-9400, $495.** While nonprogrammers can learn to use this object-oriented database, a little SmallTalk or C++ programming background wouldn't hurt. Aug 95

★★★ **QuickFigure Pro 2.1, PelicanWare, 503/221-1148, $49.95.** This Newton spreadsheet is fast, easy to use, and has a respectable set of functions. Oct 95

### COMMUNICATIONS/NETWORKS

★★★★ **Apple Mobile Message System, Apple Computer, 408/996-1010, $549 plus $19.95 per month.** The medium for your messages can be a PowerBook, Windows notebook, or Newton with this multifaceted remote-messaging service. Keep in touch with a personal 800 number, voice and fax mailboxes, and an Internet E-mail address. Sep 95

★★★★ **ASAP 1.5, MicroBeam, 813/546-2727, $695; $795 with Windows client program.** File-transfer operations can be a nightmare. Or they can be a dream with this convenient utility. It's easy to set up and its performance is first-rate. Sep 95

★ **BLAST Professional, BLAST Inc., 919/542-3007, $139.** Our reviewer could not get this telecom software to work reliably and consistently during his tests, and found the minimalist and quirky interface frustrating. Jan 95

★★★ **CreativePartner, emotion Inc., 415/812-9000, $1500.** Creative collaboration goes digital with this distribution system for video, sound, text, and graphics. Although the system provides a clever way to send annotations over a network, our reviewer wished for either a higher number of features or a lower price tag. Jul 95

★★★★ **FileWave 2.1.2, Wave Research, 510/704-3900, $895.** Maintain a central repository of files and distribute application updates to LAN users with this easy-to-use software-distribution tool. Excellent features include file distribution during idle time and the ability to copy-protect transferred files. Jul 95

★★★ **GrabNet 1.0, ForeFront Group, 713/961-1101, $19.95.** Inexpensive utility captures entire Web pages—including URLs—or selected text and graphics. Nov 95

★★ **HoloGate 1.0, Information Access Technologies, 510/704-0160, $500.** Two unique features—UUCP and Usenet news distribution—are the primary reasons to consider this product. Otherwise, it comes up price-rich and feature-poor. Apr 95

★★ **The Internet Companion, The Voyager Company, 914/591-5500, $29.95.** Well-written, HyperCard-based electronic book offers less information than others. Dec 94

★★★★ **Internet Explorer Kit and Internet Starter Kit, Hayden Books, 317/581-3500, $29.95 each.** Well-written books and useful software combine to produce one of the best introductions to the Internet available for Mac users. Dec 94

★★★★ **Internet Membership Kit 1.0 (2.0), Ventana Media, 919/942-0220, $69.95.** If you need access to the Internet, this book and software combination is a good package. The best part about it is its included preconfigured software. Dec 94

★★★★ **Netscape Navigator, Netscape Communications Corporation, 415/528-2555, $39.** World Wide Web browser is well ahead of the competition in terms of features, stability, and ease of use. Although its E-mail features could use some improvement, it's the best way to surf the Net. May 95 ◀

★★★★ **NetWorks 3.0.4, Caravelle Networks Corp., 613/225-1172, $1395 to $2495.** For networks that sprawl across buildings or states, this network-monitoring utility is an indispensable tool. It continually polls devices, checking CPUs, routers, printers, and hubs for signs of life. Apr 95

★★★★ **ProTerm Mac 1.0, InTrec Software, 602/992-5515, $129.95.** This communications pro-

*continues*

# Star Ratings

gram offers a level of sophistication that belies its small size and ease of use. It's fast, reliable, and stable, and is suitable for simple BBS connections or sophisticated scripting. Jul 95

★★★ **QuickMail 3.0, CE Software, 515/221-1801, $199 to $3799.** If you're shopping for a first-time E-mail application, this product is a good choice for ease of use and setup. The most promising new tool, rules-based messaging, lacks some important features. Jan 95

★★★ **RunShare, Run, Inc., 201/529-4600, $199 to $2499.** System extension endeavors to pump up file-transfer speeds across networks. It offers twofold to threefold throughput gains for fast Macs and large files but is less useful with small files or slow Macs. Feb 95

★★★ **Saber LAN Workstation, Saber Software, 214/361-8086, $199 plus $49 per node.** LAN-management package includes programs for network administration and remote software updating. Although it lacks some of the niceties of network-management software for other platforms, it's a useful tool for the price. Aug 95

★★★★ **Skyline/Satellite, AG Group, 510/937-7900, 1-station pack $795; 5-station pack $1195; 10-station pack $1995.** Remote monitoring engines keep an eye on LAN traffic, using the Mac's Ethernet port. It's a great system, but for large LANs the price can go sky-high. Sep 95

★★★★ **Snatcher 1.0, Software Ventures, 510/644-3232, $49.95.** FTP tool lets you connect to multiple sites simultaneously, transfer several files at once, and create scripts to automate repetitive tasks. Happily, you can continue to browse while downloading. Aug 95

★★ **TurboTalk 1.0, Information Presentation Technologies, 805/541-3000, $160 to $495.** This file-transfer utility speeds up network operations, but with many configurations the improvement is negligible. Oct 95

## DESKTOP PUBLISHING

★★★★ **Adobe PageMaker 6.0, Adobe Systems, 206/622-5500, $895.** Page-layout pioneer has been discreetly but thoroughly overhauled. More than 50 new features deliver high-powered layout, typographic, and color capabilities that put it on a par with the competition. Nov 95

★★★ **ColorDrive 1.0, Pantone, 201/935-5500, $199.** Centralized color-management software supports a broad range of color models, but accuracy isn't consistent. Nov 95

★★★ **Download Mechanic 1.0.2 (1.5), Acquired Knowledge, 619/587-4668, $249.** The strengths of this PostScript downloader lie in its tools for dealing with problem files, but when dealing with large files, it performs slowly and occasionally crashes. Feb 95

★★★★ **FrameMaker 5.0, Frame Technology, 408/975-6000, $895.** Despite a quirky interface, this is still the page-layout program of choice for complex technical documents, especially if they include multipage tables. Nov 95

★★★★ **Icefields 2.3, The Color Partnership, 619/259-8688, $895.** Stochastic-screening software offers an alternative to traditional halftones. Although it doesn't support object-oriented graphics or hi-fi color, it's an effective, inexpensive tool. Nov 95

★★★★ **Let'er RIP 2.0 (2.0.1), Lupin Software, 916/756-7267, $239.** The flexibility, clean implementation, and attention to detail of this PostScript downloader make it a pleasure to use. Feb 95

★★★★ **PageTools 1.0, Extensis Corp., 503/274-2020, $129.** Collection of ten PageMaker Additions is packed with utility. Dec 94

★★★★ **theTypeBook 4.0, Rascal Software, 805/255-6823, $59.95.** The manual needs work, but this type-specimen generator provides enough customization options to make it a worthwhile purchase. Jun 95

## EDUCATION/ENTERTAINMENT

★★★★ **3D Atlas 1.1, EA World, 415/571-7171, $79.95.** Well-designed atlas enriches map data with narration, photos, and QuickTime movies. May 95

★★★★★ **A.D.A.M. The Inside Story, A.D.A.M. Software, 404/980-0888, $79.95.** Multimedia anatomy CD-ROM teaches basic anatomy and physiology with a tantalizing mix of sound, graphics, and animation. If you are the least bit interested in learning more about how the human body works, buy this program. Mar 95

★★★ **Aquazone 1.0, Inago, 416/487-4005, $59.** The fish in this aquarium simulation are beautiful, but they're darned hard to keep alive. Only two varieties of fish are included. Jan 95

★★★★ **Crossword Wizard 1.0, Cogix Corp., 415/454-7217, $49.95.** If you're a crossword fan, this crossword-puzzle generator is a must. Dec 94

★★★ **CyberBoogie, Times Mirror Multimedia, 314/531-2503, $49.95.** The easy interface, bouncy songs, and cute graphics of this children's animation software make it a good choice for very young kids, but its relative lack of features restricts it to the same group. Apr 95

★★★★ **The Daedalus Encounter, Virgin Interactive Entertainment, 714/833-8710, $59.95.** You've been blown to smithereens and your brain has been stuffed inside a robot. Don't you hate it when that happens? Escape from a doomed spacecraft in this interactive adventure. Sep 95

★★★ **Digital Chisel 1.2, Pierian Spring Software, 503/222-2044, $199.95, site license $995.** If I had a Chisel, I'd Chisel out some quizzes; I'd say how easy this is—no I wouldn't. Ahem. What I mean is: this authoring tool lets educators create interactive quizzes, but suffers from a nonstandard interface. Jun 95

★★★ **Kids World, Bit Jugglers, 415/968-3908, $30.** Although the painting tools could be more robust, this screen-saver-creation tool for kids is easy to use, cleverly designed, and can keep kids busy for hours. Mar 95

★★★★ **The Lost Mind of Dr. Brain, Sierra On-Line, 206/649-9800, $44.95.** A wise-guy rodent tries to trip you up as you solve a series of hilarious and challenging brainteasers. Oct 95

★★★★ **Material World, StarPress Multimedia, 415/274-8383, $59.95.** This multimedia CD-ROM provides a fascinating look at diverse cultures from around the world by documenting the lives of average families. Jun 95

★★★★ **Math Workshop, Broderbund Software, 415/382-4700, $40.** Youngsters can have some fun while learning math with this collection of math-related and problem-solving games. Six-to-nine-year-olds will enjoy activities like Rhythm Shop and Bowling for Numbers. Aug 95

★★ **Merriam-Webster's Collegiate Dictionary on CD-ROM, Merriam-Webster, 413/734-3134, $69.95.** Except for its search capabilities, this dictionary doesn't offer much that sets it apart from its $6 paperback counterpart. Definitely not the last word in CD-ROM–based dictionaries. Nov 95

★★★★ **Nile: Passage to Egypt, Discovery Channel Multimedia, 301/986-1999, $49.95.** Armchair travelers will enjoy this CD-ROM cruise down the Nile. You can even keep a journal and take snapshots. Oct 95

★★★ **Small Blue Planet 2.0 (2.0.1), Now What? Software, 415/885-1689, $59.95.** The satellite photos of this atlas are truly dazzling, although the interface is less than world class. May 95

★★★★ **Storybook Weaver Deluxe 1.0, MECC, 612/569-1500, $69.95.** Hooray for applications that encourage kids to be creative! This one lets them combine pictures, sounds, and words to make their own storybooks. May 95

★★★★ **Theorist 2.0, Waterloo Maple Software, 519/747-2373, $299.** Despite an occasionally odd interface (for example, a hammer icon), this symbolic-math program is a great learning aid for students. Jun 95

★★★★ **WarPlanes 1.0, Maris Software, 800/336-0185, $69.** Wonderful multimedia CD-ROM tours the post-WWII era in military aviation. As well as pictures and text, it includes rotatable models of aircraft, an extensive database, and three flight simulators. Mar 95

★★★★ **Widget Workshop, Maxis Software, 510/254-9700, $44.95.** Fiendishly clever mad scientist's laboratory allows you to build Rube Goldberg-style widgets out of metronomes, switches, light bulbs, and much more. It encourages imagination and exploration, plus kids think it's cool. Apr 95

## FINANCE/ACCOUNTING

★★★★ **Managing Your Money 7.0, MECA Software, 203/255-1441, $79.95 (floppy); $99.95 (CD-ROM).** Personal financial software's advanced investment features make it a good choice for sophisticated investors, while the CD-ROM's instructional articles are a plus for those who are new to computerized money management. Oct 95

★★★★ **M.Y.O.B. 5.0, BestWare, 201/586-2200, $139; $239 w/payroll.** A well-designed interface makes double-entry accounting easy enough for anyone to do. And—for those small-business owners who are keeping an eye on the bottom line—the price is right. May 95

★★★ **QuickBooks 3.0, Intuit, 415/322-0573, $119.** Full-featured double-entry accounting program is easy to use, but its operation is not entirely Mac-like and its cryptic error messages may cause you to ignore serious problems. Jun 95

★★★★ **Quicken 5.0, Intuit, 415/322-0573, $49.95.** A calendar and new ease-of-use features keep this personal finance software comfortably ahead of the pack. This upgrade is an incremental, but still welcome, improvement over an already excellent product. Feb 95

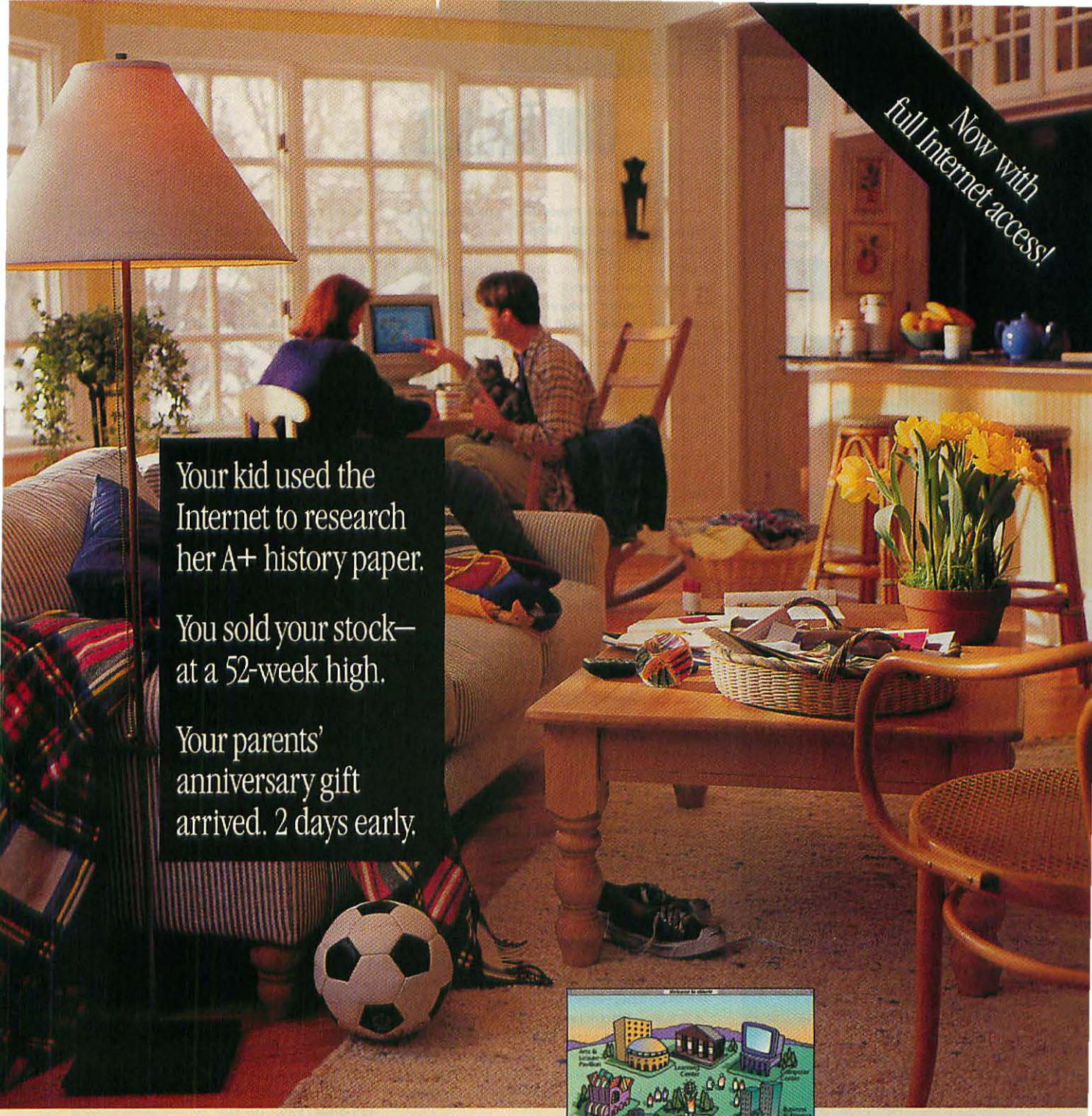
★★★ **StreetSmart 1.0, Charles Schwab & Company, 800/334-4455, $59.** If Schwab is where you want your investments held, and if you want to have tighter control over your portfolio and to save on brokerage fees, you should seriously consider this financial investment software. Feb 95

## GRAPHICS

★★★ **AddDepth 2.0, Ray Dream, 415/960-0768, $99.** If your text and graphics are looking a little flat, you can extrude them with this 3-D effects program. New routines automate the design process, but drawing tools are still limited. Nov 95

★★★★ **Adobe Dimensions 2.0, Adobe Systems, 415/961-4400, $199.** 3-D effects software has added color support, as well as drawing and text tools. Its ability to create resolution-independent 3-D images and map two-dimensional art earn Dimensions a place on a designer's hard drive. Apr 95

*continues*




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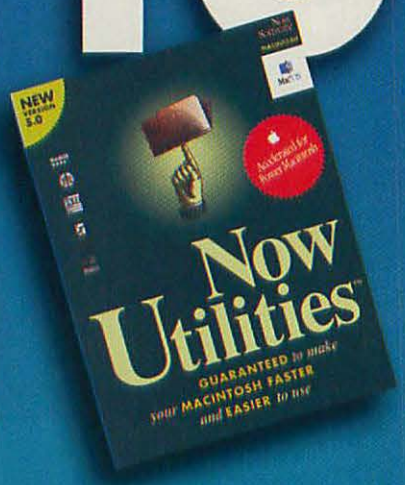
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# Star Ratings

★★★★ **Adobe Photoshop 3.0, Adobe Systems, 415/961-4400, $895.** Image-editing program both broadens its capabilities and simplifies its work environment in this dynamic upgrade. While it's not perfect, the pros far outweigh the cons. **Jan 95**

★★★ **Adobe TextureMaker 1.0 (2.0), Adobe Systems, 415/961-4400, $199.** Versatile program lets you layer effects to create custom textures. The textures are impressive, but the program's a bit pricey. **Oct 95**

★★★ **Alien Skin Textureshop 1.0, Virtus, 919/467-9700, $99.** Apply mutations to master textures to create custom patterns made up of seamless tiles. Control freaks won't like this program's random mutations, but it provides a simple way to create patterns. **Jul 95**

★★ **Art Explorer 1.0, Aldus Consumer Division, 206/628-2749, $49.95.** While its cartoon style is refreshing and its features promising, this paint/draw program for kids is still rough around the edges. Its biggest limitation is that it's unusably slow on 68030 Macs. **Feb 95**

★★★ **Black Box 2.0, Alien Skin Software, 919/832-4124, $119.** Ten filters let you add special effects to Photoshop images. A useful collection for a modest price. **Nov 95**

★★★★ **Blueprint 5.0, Graphsoft, 410/290-5114, $295.** For plain old 2-D drafting, this CAD software has a rich, easy-to-use feature set and is admirably fast. The Power Mac version in particular is a first choice for large architectural or engineering diagrams. **Jan 95**

★★★ **CD-Q 2.0, Human Software Company, 408/741-5101, $145.** Take advantage of Kodak's YCC format for Photo CD with this Photoshop plug-in, which lets you make color corrections and fine-tune color separations. **Jul 95**

★★★ **ClarisDraw 1.0 (1.0v2), Claris Corp., 408/727-8227, $399.** For presentations without grand artistic pretensions, this draw program can be an effective tool. **Jan 95**

★★★★ **Color It 3.0, MicroFrontier, 515/270-8109, $149.95.** Don't turn Old Paint out to pasture yet. This venerable paint program has been updated with a number of powerful new features, including precise control over pressure-sensitive input, convolution functions, and a focus filter. A great program for beginners. **Aug 95**

★★★★ **ElectricImage Animation System 2.0 (2.1), Electric Image, 818/577-1627, $7495.** Although the price may seem incredibly high, this software, with its extraordinary animation and image-rendering capabilities, is worth every penny for cinematic-production professionals. **Dec 94**

★★ **FloorPlan Plus 1.1, ComputerEasy International, 602/829-9614, $49.95.** Simple, affordable CAD program is intended for rudimentary design tasks. While it offers a good set of basic drafting tools, it falls short in several areas; only 16 colors are supported, for example, and rulers are nowhere to be found. **Sep 95**

★★★ **Flying Colors, Davidson & Associates, 310/793-0600, $59.95.** While not the most dynamic kids' program, this paint/draw program provides easy-to-use tools and nicely drawn stamps for ages eight to adult. **Feb 95**

★★★★★ **Fractal Design Painter 3 (3.1), Fractal Design Corp., 408/688-8800, $499.** Image-creation program has achieved a rare state of perfection, balancing enhanced conventional controls with spectacular effects packaged inside a tidy interface. It offers a new level of usability and genuine practicality. **Apr 95**

★★★ **FullPixelSearch 1.5, Avian Systems, 201/224-2025, $1295.** Analyze scientific images with a variety of pixel-selection functions. It's a useful tool for scientists, but could use batch processing, scripting, the ability to handle 12- and 16-bit images, and a heftier manual. **Jul 95**

★★★ **Gryphon Batch It 1.0, Gryphon Software, 619/536-8815, $199.** Arranges tiles in a visual interface to automate repetitive graphics operations. Although it lacks conditional statements, this batch processor is a time-saver. **Jun 95**

★★★ **Intellihance 1.0, DPA Software, 214/517-6876, $129 to $299.** Photoshop plug-in automates the process of improving scanned graphics with color correction and control over contrast, focus, and graininess. **Sep 95**

★★★★ **KPT Bryce 1.0 (1.0.1), Meta Tools, 805/566-6200, $199.** For less than $200, you get a remarkable 3-D landscape-rendering program, a CD-ROM of images, a slide-show utility, and some screen-saver modules. **Dec 94**

★★★★ **KPT Convolver 1.0, Meta Tools, 805/566-6200, $199.** Create your own Photoshop filters the intuitive way with this imaginative and absorbing plug-in module. The interface allows you to experiment, combining effects, tweaking results, and applying multiple undos if necessary. **Aug 95**

★★★★ **KPT Vector Effects 1.0, HSC Software, 805/566-6200, $199.** Adobe Illustrator and Macromedia FreeHand users will enjoy this imaginative collection of 13 plug-in filters that warp, distort, and otherwise alter vector-based images. **Oct 95**

★★★★ **Live Picture 2.0, HSC Software, 805/566-6200, $995.** Latest version of this innovative image editor boasts lower RAM requirements, faster operations, and a much lower price tag than the original. **Sep 95**

★★★★ **MacDraft 4.0, Innovative Data Design, 510/680-6818, $449.** Report-links to Excel and a clean interface make this 2-D CAD software an excellent choice for use in mechanical engineering and construction. Plus, it's easy to learn. **Mar 95**

★★★★ **MacPhase 2.0, The Otter Solution, 315/768-3956, $279.** This speedy, feature-rich program offers the full spectrum of standard scientific and graphics image processing tools. Note that it's aimed at technical users, not dabblers. **Aug 95**

★★★★ **Macromedia FreeHand 5.0, Macromedia, 415/252-2000, $595.** The new version of this venerable program has not only kept pace with the competition but has also added unique features of its own. Although the interface is more cluttered than ever, the wealth of new capabilities make this the drawing program to buy. **May 95**

★★★ **MovieFlo' 1.1, The Valis Group, 415/435-5404, $899.** Tug, twist, and pinch your sister—or at least a digital image of her—with this special-effects program for stills or QuickTime movies. Well-designed application is hampered by a steep price and a poor manual. **Jun 95**

★★★★ **Paint Alchemy 2.0, Xaos Tools, 415/487-7000, $199.** An interface lift, additional blending options, and improved animation controls make this flexible image editor an appealing add-on for digital artists. **Sep 95**

★★★★ **PhotoEnhancer 1.0, PictureWorks, 510/855-2001, $129.** Nifty utility provides dozens of ways to improve the quality of QuickTake photos, from sharpening or softening focus to correcting over- or underexposed shots. **Apr 95**

★★★ **PhotoFix 2.8.8, Microspot USA, 408/253-2000, $249.** This image-editing/photo-enhancement program needs refinement, but its modest price and its ability to optimize images for output to low-end printers make it a useful tool. **Sep 95**

★★★ **PhotoFlash 2.0, Apple Computer, 408/996-1010, $129.** If you want to enhance or catalog

*continues*

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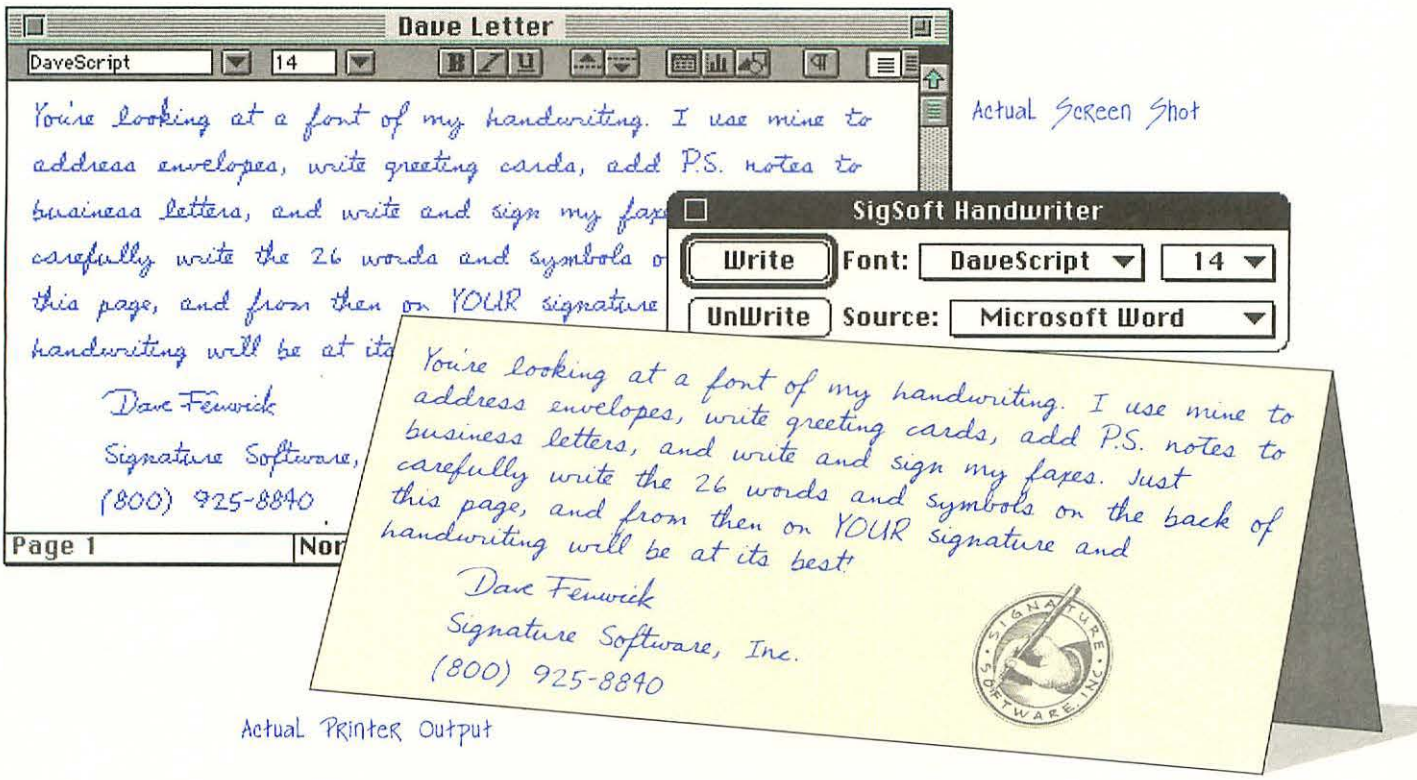
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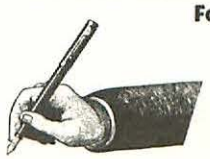
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2. Write the words shown within each box using the broken lines as a base. Begin each word on the left side of the boxes. Characters can be connected or disconnected or a combination of both!
3. Write naturally and consistently. Practice first on a separate sheet of paper. Remember, what you write here will become the final font.
4. For best results use a rollerball or fibertip pen. **Do not use ballpoint pens or pencils!**
5. Use the grid lines in the boxes as an aid to maintain consistent height and slant. Be sure capital letters are proportional to lower case letters.

kagvels

kagvels

6. Write your capitals normally. Consider the appearance of capitals when used at the beginning of words AND when words are all capitalized. **Don't forget the punctuation!**
7. Name your font and complete the ordering information on the front of this form. **Indicate WIN (Windows) or MAC (Macintosh)!**

**NOTE:** Strike out mistakes and write corrections nearby. Signature Software can even make changes after you receive your font!

kagvels

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# Star Ratings

images acquired from a scanner or a digital camera such as Apple's QuickTake 100, consider this utility. It's not a high-end image-editing program, but it does offer basic image-retouching tools at a reasonable price. Jul 95

★★ **PhotoFusion 2.0.3, Ultimatte, 818/993-8007, $695.** If your original shot is clean, this Adobe Photoshop masking plug-in does a good job. But in the real world, this program's poor manual and less-than-intuitive controls make it hard to use. Oct 95

★★★★ **Pixar Typestry 2.1, Pixar, 510/236-4000, $299.** With QuickDraw GX support, an approachable interface, a strong array of animation features, and outstanding image quality, this 3-D type-effects software is worth a try. It adds a new dimension to the way you look at type. Feb 95

★★★★ **PixelPaint Pro 3.01, Pixel Resources, 404/449-4947, $379.** Color paint program strikes a good balance between the artistic demands of painting and the technical precision of image processing. Mar 95

★★★ **PixelPutty Solo (1.5), The Valis Group, 415/435-5404, $399.** Affordable modeler lets you manipulate 3-D objects as if they were clay. It's a capable program, but a bare-bones interface and skimpy manual make it somewhat daunting for novices. Jun 95

★★★★ **Poser 1.0, Fractal Design, 408/668-5300, $199.** Specialized graphics tool generates three-dimensional human figures. Its appealing interface is simple enough for beginners, while its powerful graphics capabilities are suitable for professionals. Oct 95

★★★★ **PowerCADD 2.0, Engineered Software, 910/299-4843, $795.** The latest incarnation of PowerDraw, PowerCADD is built for speed, but users will also take comfort in an enhanced interface and new drawing tools. Oct 95

★★★ **Ray Dream Designer 3.1.1, Ray Dream, 415/960-0768, $349.** 3-D graphics program provides competent (if sometimes awkward) modeling tools, offers excellent surface-texturing capabilities, and produces high-quality ray-traced renderings. Mar 95

★★ **Select 1.6, Human Software Company, 408/741-5101, $245.** Although its selection mode provides a convenient and intuitive way to make changes to several colors at once, all the features of this CMYK color-correction plug-in can be found in Photoshop. Jul 95

★★★★ **SmartSketch 1.0, FutureWave Software, 619/637-6190, $69.95.** Innovative, easy-to-use graphics program unites the free-form creatvity of a paint program with the structure and precision of object-oriented drawing. Sep 95

★★★ **Specular Collage 2.0.1, Specular International, 413/253-3100, $399.** Practical image-compositing solution supplies a smooth interface and strong support for Adobe Photoshop 3.0. As long as you're willing to return to Photoshop to confirm your edits and make final changes, it's a serviceable tool. Feb 95

★★★★ **TextureScape 1.5, Specular International, 413/253-3100, $195.** Algorithmic art program lets you manipulate and arrange PostScript shapes to create seamlessly repeating patterns. Like the best tools, it's simple enough to be fun and flexible enough to give you meaningful control. Feb 95

★★★★ **Transverter Pro 3.0, TechPool Studios, 216/382-1234, $395.** Graphics-conversion tool lets you preview PostScript files or convert them to other formats. A must-have for publishing professionals. Nov 95

★★★★ **TypeTwister 1.0, Adobe Systems, 415/961-4400, $29.99.** Inexpensive, easy-to-use, and fun type styler lets you create wildly styled text effects, although it won't satisfy hard-core type manipulators. Jan 95

★★★ **Virtus WalkThrough Pro 2.0, Virtus Corp., 919/467-9700, $495.** Aside from occasional stumbles, this design tool is an exceptional program that lets you quickly and intuitively interact with your designs and gives clients the opportunity to visit and explore your creations before they are built. Apr 95

★★★★ **Vision 3d 4.0, Strata, 801/628-5218, $695.** 3-D modeling, rendering, and animation package expands its array of modeling tools and adds two renderers. Plug-in extensions provide a practical way to customize the program, while easy-to-read documentation makes learning its many features relatively painless. Jul 95

★★★ **Vistapro 3.0, Virtual Reality Laboratories, 805/545-8515, $149.95.** 3-D landscape rendering software uses digital versions of U. S. Geological Survey maps to create images and allows you to add external features such as buildings and rivers. Although it's a good program, it has some limitations. Feb 95

★★ **xRes 1.11, Fauve Software, 415/543-7178, $799.** You can apply a variety of effects to selected areas of a large composition with this image editor. Although it offers pluses such as useful filters and customizable gradients, this program's numerous interface oddities make it less attractive than the competition. Jul 95

## MATH/SCIENCE

★★★★ **Chamber Works 1.0.2 (1.1), OnScreen Science, 617/776-6416, $99.** Simulator for particle-physics events is the best introduction to particle physics yet produced, at a great price. Dec 94

★★★★ **The Fuzzy Logic Toolbox 1.0, MathWorks, 508/653-1415, $895.** Control-system engineers who want to incorporate fuzzy logic into their systems will find this software an excellent aid. It includes a helpful tutorial and a well-designed graphical interface. Sep 95

★★★★ **LabView 3.1, National Instruments, 512/794-0100, $1995.** With improved graphing and printing features, Power Mac optimization, and links to HiQ, this instrument-emulation software is a must for Macintosh-based laboratories. Nov 95

★★★★ **MLab, Civilized Software, 301/652-4714, $1495.** Mathematical-modeling software lets you do fast computation on numerically complex real-world problems, using an ancient Mac II or higher. You must be willing to write short programs, but professional researchers will find it a rewarding choice. Apr 95

★★★★ **Statistica/Mac 4.1, StatSoft, 918/583-4149, $695.** At present, this statistical software is the undisputed features-per-dollar champion in the Mac market. Mar 95

★★★★ **Survival Tools 1.0 (1.1), Abacus Concepts, 510/540-1949, $295.** The combination of survival analysis with the StatView template systems gives you a virtual actuary-in-a-box. It's a great set of tools, conveniently packaged. Feb 95

## ORGANIZATION/PRODUCTIVITY

★★★ **ACT 2.0, Symantec Corp., 503/334-6054, $249.95.** Contact manager's file-level compatibility with DOS and Windows and its complete contact management make it worth considering if you can live with its weak scheduling functions. Mar 95

★★★★ **Arrange 2.0, Common Knowledge, 415/325-9900, $349.** If your needs fall beyond the usual calendar and address-book functions, this personal information manager is a strong contender. Dec 94

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**STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION REQUIRED BY 39 U.S.C. 3685**

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None

8. There are no known bondholders, mortgagees, or other security holders owning or holding 1% or more of the total amount of bonds, mortgages, or other securities.

10. Extent and nature of circulation: Average no. copies each issue during preceding 12 months: A. Total no. copies (net press run), 788,669; B. Paid and/or requested circulation 1. Sales through dealers and carriers, street vendors and counter sales, 115,385; 2. Mail subscription; (paid and/or requested), 517,620 C. Total paid and/or requested circulation (sum of 10B1 and 10B2), 633,005 D. Free distribution by mail carrier or other means, samples, complimentary, and other free copies, 30,084 E. Total distribution (sum of C and D), 663,089 F. Copies not distributed: 1. Office use, left over, unaccounted for, spoiled after printing 2,566; 2. Return from news agents, 122,485; G. Total (sum of E, F1 and F2-should equal net press run shown in A) 788,139 Actual no. copies of single issue published nearest to filing date: A. Total no. copies (net press run), 781,778; B. Paid and/or requested circulation: 1. Sales through dealers and carriers, street vendors and counter sales, 126,491; 2. Mail subscription (paid and/or requested), 512,408; C. Total paid and/or requested circulation (sum of 10B1 and 10B2) 638,899; D. Free distribution by mail carrier or other means, samples, complimentary, and other free copies, 15,110; E. Total distribution (sum of C and D), 654,009; F. Copies not distributed: 1. Office use, left over, unaccounted for, spoiled after printing 2,926; 2. Return from news agents, 123,419; G. Total (sum of E, F1 and F1 should equal net press run shown in A) 780.354.

11. I certify that the statements made by me above are correct and complete. Adrian Mello, Editor.

# Star Ratings

★★★ **Claris Organizer 1.0 (1.0v2), Claris Corp., 408/727-8227, $99.** New personal information manager users, lured by the price, performance, and ease of use of this product, will find that it meets their needs. Most longtime PIM users won't be tempted to switch. Jan 95

★★★★ **ClarisWorks 4.0, Claris, 408/727-8227, $129.** Dozens of delicate nips and tucks, rather than a massive overhaul, characterize the latest upgrade of this integrated program. Its word processor and database components can stand up to their stand-alone counterparts. Oct 95

★★ **ClienTrac 2.0, Whiskey Hill Software, 415/851-8702, $99.** It's easy to enter contact information, but this PIM is slim on speed, features, and flexibility. May 95

★★★ **Day-to-Day Organizer 1.0, Portfolio Software, 802/434-6400, $149.95.** The address-book and outlining components of this organizer are great, but overall it's a mixed bag. The calendar interface and the way it handles recurring events need to be improved. May 95

★★★ **Expresso 1.0, Berkeley Systems, 510/540-5535, $69.99.** The just-the-basics approach of this calendar and address book might be just fine for people who don't need the feature set of other calendar programs and enjoy its graphics. Apr 95

★★★ **FastPace Instant Contact 1.0 (1.1), Attain Corp., 617/776-1110, $39.99.** Although this contact manager could use a few additional features—especially a menu-bar search function—it does a capable job, and it is intuitive and easy to use. Jan 95

★★★ **FastTrack Schedule 3.0, AEC Software, 703/450-1980, $299.** Updated version of this project planner includes a detailed calendar, a customizable Gantt chart, and new formatting columns, but additional customization options would be helpful. Aug 95

★★★★ **In Control for Workgroups 3.5, Attain, 617/776-1110, $149.95; 10-pack $949.95.** Flexible project planner and scheduler combines an outliner and a calendar. It's a valuable tool for networked groups that need to share project information. Sep 95

★★★ **InfoGenie 1.0.5, Casady & Greene, 408/484-9228, $79.95.** Data manager supports both free-form and field-based files, but list-view functions are limited. Nov 95

★★★ **InTouch 2.5, Prairie Group, 515/225-3720, $69.95.** Free-form contact manager offers speedy access to information. If you don't need to perform complex searches or sorts, this program is a good choice. Sep 95

★★★★ **Now Up-to-Date and Contact 3.5, Now Software, 503/274-2800, $99.** New features such as an improved to-do list and a linked notepad make this the premier address-book and calendar program. Nov 95

★★ **Peanuts Family Organizer 1.0, Individual Software, 510/734-6767, $19.95.** Organizer's endearing interface doesn't make up for missing or poorly implemented features. Jun 95

★★ **Souvenir 2.2, ComposeTel, 415/327-0744, $49.** This contact manager is fast and simple, but it's hard to recommend when you can buy integrated contact managers and schedulers for about the same price. Dec 94

## PRESENTATION TOOLS

★★★★ **Adobe Premiere 4.0 (4.0.1), Adobe Systems, 415/961-4400, $795.** Video-editing software remains as solid and reliable as previous versions, and also advances far and above its competitors with new and improved professional-level features. Dec 94

★★★ **Amazing Animation 1.0, Claris Corp., 408/727-8227, $49.** Cute pictures, funny sounds, and a kid-friendly interface come together in this package that lets children produce short animations. Jan 95

★★★ **CyberSound FX 1.0, InVision Interactive, 415/812-7380, $129.** Fifteen audio filters improve sound quality in Adobe Premiere. The filters are useful but somewhat hard to access. Nov 95

★★★ **Electronic Marker 1.0.2, Consumer Technology Northwest, 503/643-1662, $34.95.** This annotation tool can be a practical enhancement to live demos and on-screen presentations, but it needs better controls for modifying and preserving markup layers. May 95

★★★ **HyperCard 2.3, Apple Computer, 408/996-1010, $129.** Latest version of Apple's multipurpose application automates many design tasks, but multimedia presentations won't run on other platforms and color is treated as an afterthought. Nov 95

★★ **Living Album 2.5, QuickMedia Labs, 408/749-9200, $129.95.** A crowded interface detracts from the usefulness—and aesthetics—of this multimedia album. May 95

★ **MediaFactory 1.0, Nuts Technologies, 408/980-7800, $199.** What the world needs is a good, low-cost QuickTime movie editor. Unfortunately, this program isn't it. It's hampered by poor documentation and an awkward interface. Nov 95

★★★★ **MediaPaint 1.0, Strata, 801/628-5218, $695.** Anyone who produces special effects for QuickTime movies will welcome this program, which lets multimedia developers edit ranges of frames. Although it's a RAM hog, this useful tool removes much of the tedium of special-effects work. Sep 95

★★★ **Microsoft PowerPoint 4.0, Microsoft Corp., 206/882-8080, $339.** If you're in the market for a presentation-graphics program, this is a good choice to use along with Word or Excel, as long as you don't mind the lack of animation functions. Feb 95

★★ **mPower 2.0, Multimedia Design Corp., 704/523-9493, $295.** Despite a handful of sophisticated multimedia features, this authoring tool is too limited to be compelling. While its push-button interface is easy to understand, it's far too cumbersome. Apr 95

★★★★ **Presenter Professional 3.0, VIDI, 818/358-3936, $1995.** The improved interface, enhanced animation module, and reduced price of this 3-D modeling and animation package make it an excellent choice for multimedia producers. The new audio features are especially appealing. May 95

★★★ **SoundEdit 16, Macromedia, 415/252-2000, $379.** Digital audio software supports 16-bit sound and has enough goodies to earn it a place in a multimedia producer's toolbox. Dec 94

★★ **Special Delivery 2.0, Interactive Media Corp., 415/948-0745, $399.** Multimedia authoring tool can be confusing and isn't the best choice for complex projects. Still, it may save hours of training for users who merely need to create simple presentations. Apr 95

★★★★ **SuperCard 1.7.1 (2.0), Allegiant Technologies, 619/587-0500, $495.** Multimedia authoring system adds a few welcome enhancements and squashes some old bugs. Feb 95

★★★★ **TransJammer, Elastic Reality, 608/273-6585, $99.** Plug-in for Adobe Premiere and Avid VideoShop offers 100 customizable video-transition effects, ranging from the conventional to the, well, odd (like falling cows). If you've ever tried to make your own falling-cows transition, you'll appreciate this time-saving tool. Aug 95

*continues*

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## PROGRAMMING

★★★★ **AppWare 1.2, Novell, 801/429-7000, $495.** Development system offers professional and novice programmers an efficient, graphical method of creating commercial or in-house applications. Oct 95

★★★★ **FaceSpan 2.0, Software Designs Unlimited, 214/578-6700, $199.** Programmer's tool lets you quickly build AppleScript interfaces. New features such as drag-and-drop functions and tables make it easy to create stand-alone applications. Nov 95

★★★★ **JAM 6, JYACC, 212/267-7722, $2000.** Thanks to this well-designed tool, the Mac is now a viable platform for development of large-scale corporate client-server database applications. Oct 95

★★★ **Script Debugger 1.0, Late Night Software, 604/929-5578, $129.** If only they'd used this on *Ishtar!* Oh, not that kind of script. This AppleScript development environment has a thoughtfully designed interface but falls a little short in the debugging department. Nov 95

★★ **ScriptWizard 1.0, Full Moon Software, 408/253-7199, $99.** Software attempts to make writing and debugging AppleScript scripts easier. But it doesn't offer enough improvement over Apple's Script Editor. Jan 95

★★★ **Symantec C++ 8.0, Symantec, 503/334-6054, $499.** The new version of this development environment offers native PowerPC compilers for C++ and ANSI C. The project manager and class browser have been improved and the compiled code is laudable, but our reviewer had some complaints about the package's resource demands and the company's support reputation. Jul 95

★★★★ **VIP-C 1.5 (1.5.1), Mainstay, 805/484-9400, $495.** For convenience in producing 680X0/Power Macintosh applications, this programming utility is a fine investment. Feb 95

## UTILITIES

★★★ **Aladdin Desktop Tools 1.0, Aladdin Systems, 408/761-6200, $89.95.** Not all the utilities in this collection are perfectly implemented, but Desktop SpeedBoost and Desktop Printer make the package worth its price. The rest can be considered a bonus. Aug 95

★★★★ **At Ease 3.0 for Workgroups, Apple Computer, 408/996-1010, $295.** Network administrators can choose from three levels of access for users with Apple's program launcher. Nov 95

★★★★ **Cal 1.0, Thought I Could, 212/673-9724, $79.95.** Well-chosen set of desktop necessities includes an excellent calculator, an associated-formula editor, a datebook, and a calendar. Jan 95

★★★ **CanOpener 3.0, Abbott Systems, 914/747-4171, $125.** You can use this handy utility to open many types of files—which can be a lifesaver if you don't have the application a file was created in—but it falls a little short in the file-search department. May 95

★★★★ **CD Directory 1.0, Insignia Solutions, 415/694-7600, $69.95.** Store catalogs of CD directories on your hard drive—and access them at hard drive speeds—with this handy utility. One complaint: cataloged CDs are treated as local drives, greatly increasing search time during a global search. Jul 95

★★★ **Color Compass 1.0 (1.1), Praxisoft, 703/729-3391, $129.** Speedy, specialized tools allow you to blend, match, and tweak colors in subtle ways not possible in most programs. Although graphics experts might not need this program, it provides helpful visual feedback for creating and organizing color palettes. Aug 95

★★★★★ **Conflict Catcher 3, Casady & Greene, 408/484-9228, $99.95.** This extension-management utility was already great—and it just got better. Like a digital Jimmy Carter, it offers a friendly, flexible approach to conflict resolution. Sep 95

★★★★ **Disc-To-Disk, Optical Media International, 408/376-3511, $199.** Audio-capture utility's friendly interface provides a simple way to transfer sound from a CD to the Mac's hard drive. A useful tool for multimedia authors. Jun 95

★★★★ **DiskGuard 1.0.1 and DiskGuard Remote, ASD Software, 909/624-2594, $129 to $799.** Rock-solid, flexible disk-protection tools are worth serious consideration if your Mac or Macs are accessible to other users. Mar 95

★★★ **DragStrip 1.0, Natural Intelligence, 617/876-4876, $39.95.** Icon-based file and folder organizer brings a semblance of order to your cluttered desktop. But your troubles aren't over unless a future version lets you label folders. May 95

★★★ **eDisk 2.0, Alysis Software Corp., 415/928-2895, $149.95.** Driver-level software compresses data read to your drive on the fly and automatically expands data read from your drive. Dec 94

★★★ **File Genie Pro 1.1, Duet Development, 408/559-3838, $89.** File-management utility offers fast, convenient cataloging and searching of stored files, but its search criteria are limited. Oct 95

★★★★ **FolderBolt Pro 1.0.3, Kent Marsh, 713/522-5625, $129.95.** Feeling unsecured? Top-notch encryption schemes and flexible access controls let you secure your Mac's contents by password-protecting folders and encrypting the data they contain. Jul 95

★★★ **Gear 2.5, Elektroson, 610/617-0850, $799.** CD-recordable mastering software is a mixed bag. It's speedy and reliable, but can't record HFS CD-ROMs from just part of a hard drive without additional software. Sep 95

★★★★ **Graffiti 1.01, Palm Computing, 415/949-9560, $79.** If you can't seem to teach Newton your handwriting, you can teach yourself a new writing system that Newton can handle. Kind of makes you wonder who's running the show, but it works. May 95

★★★ **Here & Now 1.0, Software Architects, 206/487-0122, $89.95.** OK. We admit it. Lots of people use DOS and Windows. This utility modifies Mac files so you can read them on a PC. Nov 95

★★★★ **InstantReplay 1.0, Strata, 801/628-5218, $149.** Now you see it, now you see it again. This utility records on-screen activity and saves it as a QuickTime movie, including audio. File-conversion capabilities are an added bonus. Sep 95

★★★★ **Kaboom 3.0, Nova Development Corp., 818/591-9600, $49.95.** Sound-effects utility with sound-editing application is a fun program for anyone who wants to play with sound. Feb 95

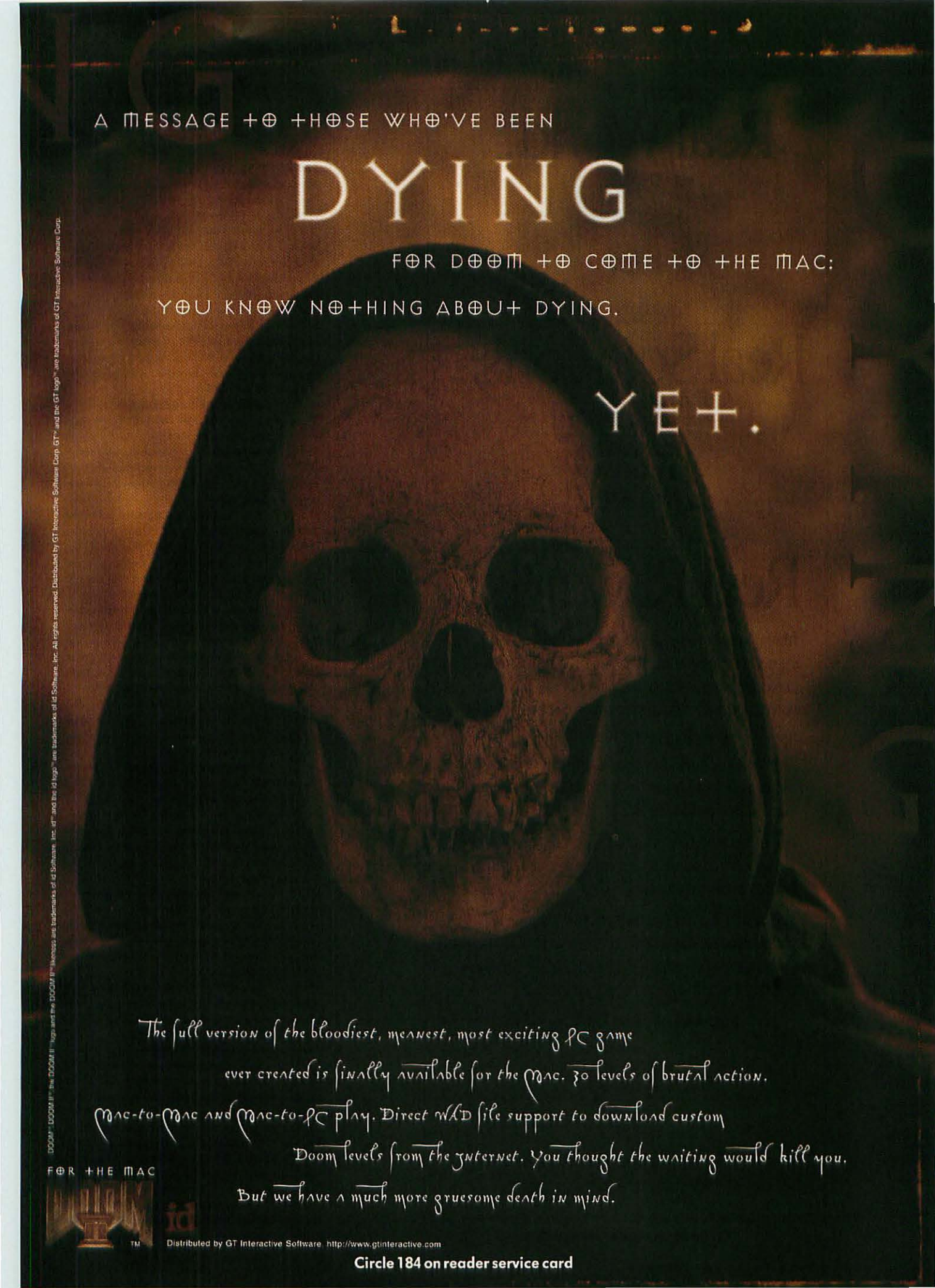
★★★★ **Launch Pad 1.0, Berkeley Systems, 510/540-5535, $49.99.** If you want to share your Mac with your kids, this desktop utility is a worthwhile investment. Jan 95

★★★ **MacTools Pro 4.0, Symantec Corp., 503/690-8090, $149.95.** This utility does a good job of diagnosing and fixing disk problems, but suffers from large RAM requirements and expensive tech support. May 95

★★★ **Menu Master Mac, Electronic Learning Systems, 904/375-0558, $99; 15-site license $299.** Security software lets an administrator restrict a user's access to certain files on a shared Mac. It's a useful program, but could use some additional features, such as the ability to restrict computer usage to particular times. Sep 95

★★★★ **MultiClip Pro 3.1, Olduvai Corp.,**

*continues*




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# Star Ratings

**305/670-1112, $59.** Easy-to-use utility is exactly what Apple's Clipboard and Scrapbook should have been; a convenient repository of data that moves between documents without fuss or muss. **Apr 95**

★★★ **Multimedia Utilities 1.1, Motion Works, 415/541-9333, $299.** Six utilities address QuickTime moviemaking, from editing movies and sound tracks to creating morphs, animations, and screen recordings. Although the utilities are appealing, you must save early and often because of frequent crashes. **Jul 95**

★★★★ **Norton DiskDoublerPro 1.1, Symantec Corp., 503/334-6054, $109.** Utility collection includes DiskDoubler, AutoDoubler, and CopyDoubler. Because of its ease of use, the product is a good choice for beginners. **Feb 95**

★★★ **Norton Utilities for Macintosh 3.1, Symantec Corp., 503/334-6054, $149.95.** Data-protection and -recovery utility collection is leaner, meaner, and faster than ever before, but it's also surprisingly uneven. While Disk Doctor leads the pack for disk-repair utilities, the back-up module is weak and the new UnErase module is missing some features. **Feb 95**

★★★★ **Now Utilities 5.0, Now Software, 503/274-2800, $89.** Three of the modules of this fine-tuned, interlocking utility set—Now FolderMenus, Now Menus, and Now SuperBoomerang—are almost indispensable, and while the other six may not be tops in their category, they're well worth considering. **Jan 95**

★★★ **On Cue II Utilities 3.0, ComputerEasy International, 602/829-9614, $99.95.** Eight modules add functionality to the Mac Operating System. It's useful, but not as comprehensive as the competition. **Sep 95**

★★★★ **OptiMem RAM Charger 2.0.1, Jump Development Group, 412/681-2692, $129.** Use RAM more efficiently with this memory-management utility. The Mac OS ought to work like this, but until it does, you should use this nifty utility. (An added bonus: it works on older Macs, back to the Mac Plus.) **Jul 95**

★★★ **PaperPower 1.0, Piptel, 513/294-6656, $149.** Graphics-tablet utility provides a useful tool for creating and using macros, but the overlays it creates can be tricky to use. **Apr 95**

★★★ **Peirce Print Tools 1.0, Peirce Software, 408/244-6554, $129.** Nine handy printing utilities work with QuickDraw GX. Most of the modules are useful, but not all are must-haves. **Jan 95**

★★★★ **Power Secretary Power Edition 2.0, Articulate Systems, 617/935-5656, $2495.** This impressively accurate speech-recognition program sits on your Mac and takes dictation, learning your voice patterns as you use it. It's expensive, but provides a viable alternative to keyboard input. **Sep 95**

★★★ **RapidCD 1.04, Insignia Solutions, 415/694-7600, $69.95.** RAM and disk caching of CD-ROM data speeds access to frequently used data. This utility does its job well, but it's incompatible with the AppleCD Audio Player and doesn't allow you to add to its settings. **Jul 95**

★★★ **RescueTxt 1.0, Abbott Systems, 914/747-3116, $79.** For decent performance and the ability to locate text in even a deleted file, this text-retrieval utility is a good choice. But it doesn't tell you what file the text comes from, so you can't just open the found file. **Apr 95**

★★★★ **S/Link 2.0, Synclavier, 603/448-8887, $249.** Batch processing is this audio-conversion utility's specialty. It supports all major audio file formats and offers a straightforward interface. **Nov 95**

★★★★ **Square One 2.0 (2.0.1), Binary Software, 310/449-1481, $74.** The slick design, flexibility,

*continues*

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# Star Ratings

and straightforward interface of this file-launching utility make it a pleasure to use. Dec 94

★★★★ **StuffIt Deluxe 3.5, Aladdin Systems, 408/761-6200, $129.95.** If you're looking for a compression solution, you should look at this product. Its drag-and-drop applications, Magic Menu, and file translators make it easy to integrate compression into your routine. Mar 95

★★★★ **TypeTamer 1.0.4, Impossible Software, 714/470-4800, $59.95.** Versatile font utility provides information on installed fonts and simplifies tasks such as typing special characters and reselecting fonts from the menu. May 95

★★★ **ultraSecure 3.524, usrEZ Software, 714/756-5140, $239.** Security program offers a comprehensive set of protection tools, but has a few flaws, including incompatibilities with several types of programs. Sep 95

★★★★ **Virex 5.5.1, Datawatch Corporation, 508/988-9700, $99.95.** Comprehensive, reliable, and speedy utility helps protect your files from those misguided lads who get their jollies by releasing viruses. To keep it current, updates are available on online services. May 95

★★★ **Zonkers 1.0, Nova Development, 818/591-9600, $19.95.** Redecorate your Mac with this collection of silly desktop enhancements. Customize icons, scroll bars, cursors, buttons, menu bars, windows, and desktop patterns to create your own look. Aug 95

## VERTICAL MARKETS

★★★ **Autoscore 1.0, Wildcat Canyon Software, 510/527-5155, $150.** Converting the human voice into MIDI note information is a challenging task. If you have the right music software, mike, and voice, this music-recognition software can actually pull it off. Feb 95

★★★ **Bird Brain 2.01, Ideaform, 515/472-7256, $99.95.** Database lets bird watchers record every sighting of every bird they have ever seen to create electronic life lists. Jan 95

★★★ **ConcertWare 1.5.7, Jump Software, 415/917-7460, $159.** Although it lags behind the competition in performance and features, this music-notation program's low price and ease of use make it a viable choice for the budget-wise. Jun 95

★★★ **DigiTrax 1.1, Alaska Software, 408/738-3320, $349.** If you're an amateur musician or a multimedia producer with modest sound-recording needs and you have a Quadra AV, consider this audio-recording software. What it lacks in features, it makes up for in simplicity and a relatively low price tag. Mar 95

★★★ **ErgoKnowledge 1.0, Visionary Software, 503/246-6200, $395.** Despite a few shortcomings, this CD-ROM offers a good, basic review of office-computer ergonomics. Dec 94

★★★★ **FreeStyle 1.01, Mark of the Unicorn, 617/576-2760, $200.** Music sequencer organizes MIDI instruments into players, a metaphor that's easier to understand than traditional tracks and patches. It could use a lyric tool. Nov 95

★★★ **Insta Software, Chang Labs, 408/727-8096, $29 per module.** No-frills, preprogrammed relational databases handle forms and record-keeping for specific businesses. They can't be customized, but the databases are straightforward and require little training or setup. Aug 95

★★★ **MayaCalc 2.3.1 (2.3.3), Ecological Linguistics, 202/546-5862, $120.** 4th Dimension database alleviates much of the pain involved in working with the complex, multilayered Maya calendar. Feb 95

★★★★ **Maya Hieroglyphic Fonts, Ecological Linguistics, 202/546-5862, $10 to $60 per set.** Although these fonts based on Mesoamerican hieroglyphic scripts are beautifully rendered, the character spacing is sometimes uneven. Feb 95

★★★ **Medical HouseCall 1.0, Applied Medical Informatics, 801/464-6200, $99.95.** Interactive medical guide is a painless way for people to learn about diseases, tests, and therapies. Feb 95

★★★★ **Nightingale 2.0, TAP Music Systems, 206/462-1007, $495.** With its lightning speed, powerful editing tools, and OCR entry option, this bird can stand up to any music-notation product on the market. Oct 95

★★★★ **Overture 1.02, Opcode Systems, 415/856-3333, $495.** Easy-to-learn, midrange notation software has a friendly interface and shows real polish. If you don't need all the features of a high-end product, it's a serious contender. Apr 95

★★★ **Performer 5.02, Mark of the Unicorn, 617/576-2760, $495.** A colorful, redesigned interface and improved sheet-music view are just part of this MIDI recording program's worthwhile overhaul. Mar 95

★★★★ **Practica Musica 3.0 (3.1), Ars Nova Software, 206/889-0927, $140.** Music-teaching program, with emphasis on sight-reading and ear-training techniques, shines as a smart, infinitely patient personal music coach in the classroom. Jan 95

★★★ **Route 66 1.5, Route 66 Geographic Information Systems B.V., 415/957-0666, $79.95.** Jack Kerouac could have saved a lot of time if he'd used this route planner (unless he was driving to Alaska, which isn't included). It's fast, but omits some cities and can't handle more than three destinations at a time. May 95

★★★ **StoryBoard Artist 1.5, PowerProduction Software, 310/937-4411, $499.** Build a storyboard by selecting backgrounds, characters, and props from a library. While it's a helpful tool, starving artists will find its price too high. Oct 95

★★★ **Vision 2.08, Opcode Systems, 415/856-3333, $495.** MIDI program's list of exclusive, creativity-slanted features, such as endless count off and scrubbing (which lets you hear the music as you drag across it), give the program a usability edge. Mar 95

★★ **Visual Arranger 1.0, Yamaha Corporation of America, 714/522-9240, $59.95.** Icons represent musical styles in this song-building program. It's fun, but the icons can be cumbersome, and the program lacks features required by professional musicians. Nov 95

## WRITING TOOLS

★★★★ **Bookends Pro 3.1, Westing Software, 415/435-9343, $129.** Comprehensive database program catalogs and stores all of your reference material—actual quotes as well as citations. It's a useful tool that researchers will appreciate. Mar 95

★★★★ **EndNote Plus 2.0, Niles & Associates, 510/649-8176, $299.** Despite its power, this indispensable bibliography and citation manager is surprisingly easy to learn and use. If you have to work with references, it's a good choice. Apr 95

★★★ **FullWrite 2.01, Akimbo Systems, 617/776-5500, $395.** As the leanest of all high-end word processors, this product requires only 2MB of RAM. Its modular architecture is complex, but it's worth considering if you don't need to share files with the Word/WordPerfect crew. Apr 95

★★★ **Grammatik 6 for Macintosh, Novell, 801/225-5000, $49.95.** The low price, pleasant interface, and improved accuracy of this grammar checker make it worthwhile for a large number of quality-driven writers. It *continues*

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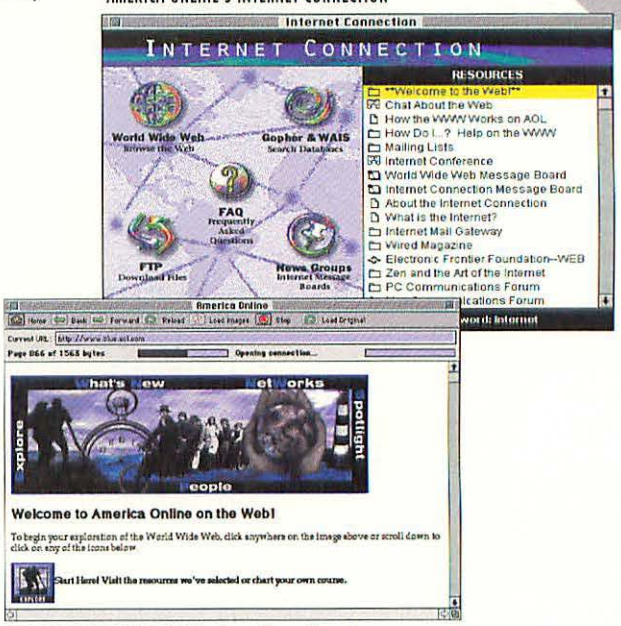
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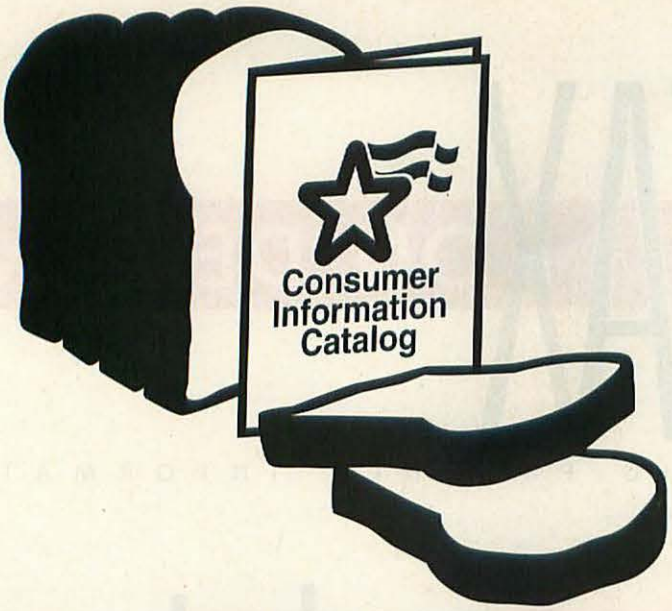
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# Star Ratings

still misses some errors. **Feb 95**

★★★ **Inspiration 4.1, Inspiration Software, 503/245-9011, $195.** Writing tool allows you to move between words and diagrams to show the relationships between ideas. This version adds improved keyboard controls, import and export capability, plus more. **Apr 95**

★★★ **Microsoft Word 6.0, Microsoft Corp., 206/882-8080, $339.** If you can put this word processor's new features—*including* cross-referencing, AutoText, automatic numbering, macros, and more—to work and you have a Quadra 650 or faster Mac, take the plunge. If you have a slower 68040 Mac, think twice; and if you have a 68030 Mac, don't even think about it. **Feb 95**

★★★ **Nisus Writer 4.0, Nisus Software, 619/481-1477, $495.** In a few specialized areas—such as mixing English and non-Romance languages—this word processing program is unmatched. **Mar 95**

★★ **Read-It O.C.R. Pro 5.0, Olduvai Corp., 305/670-1112, $395.** Although this OCR software has a nice collection of features, its recognition engine isn't up to par. It's not a first choice unless you simply need to process piles of very clear Courier text. **Apr 95**

★★★ **Three by Five 2.0, MacToolkit, 310/395-4242, $99.** How retro! This idea organizer uses the metaphor of index cards on a corkboard. Unlike real index cards, the program lets you attach QuickTime movies, link cards, or switch to an outline view. **Aug 95**

★★★ **Writing Coach 1.0, WritePlace Software, 503/484-6380, $89.** If you'd like help with your writing, this writing-skills tutorial could be a great investment. Skillfully worded worksheets assist with planning, organizing, and revising. **Dec 94**

## Hardware

### INPUT DEVICES

★★★★ **ArtPad, Wacom Technology, 206/750-8882, $199.** Measuring less than 7 by 7½ inches, this pressure-sensitive tablet is sheer convenience if you're looking for a device that you can hide away one moment and readily exhume the next. **Apr 95**

★★★ **ChoiceStick 1.0.2, Kernel Productions, 302/456-3026, $69.95.** Entering data into a spreadsheet is much quicker if you use a joystick instead of a mouse. Well, maybe you can convince your boss of that. Otherwise, use this port to attach a pair of joysticks to your Mac so you can play games. **Sep 95**

★★★★ **DrawingSlate II, CalComp, 602/948-6540, $395.** A responsive stylus and user-definable macros make this digitizing tablet an excellent choice for artists and illustrators. **Jun 95**

★★★★ **FlightStick Pro for Macintosh, CH Products, 619/598-2518, $129.95.** The authentic feel of this joystick, along with well-conceived software, make it a nearly perfect desktop pilot's companion. **Dec 94**

★★★ **GlidePoint, Alps Electric, 408/432-6000, $99.** If you find moving the mouse a pain in the arm, you might want to try this alternative pointing device, which lets you position the cursor by moving your finger across its surface. **Jul 95**

★★ **Jetstick, CH Products, 619/598-2518, $74.95.** Our reviewer liked this joystick's hardware, but found the manual and the software lacking. **Sep 95**

★★★ **MacAlly, The Mace Group, 213/780-6110, $49.** ADB mouse doesn't stand out from the crowd, but it's durable, glides smoothly, and won't leave a big hole

*continues*

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Circle 105 on reader service card

# Star Ratings

in your pocketbook. Jul 95

★★★ **Mouse Deluxe Mac, MicroSpeed, 510/490-1403, $69.** The extra buttons of this mouse offer several features that Apple's mouse doesn't match, but its shape may not suit everyone's taste. Mar 95

★★★ **Mouse-Trak, Itac Systems, 214/494-3073, $179.** If you hate meeses to pieces, you might try this trackball input device. It's sturdy, but our reviewer found its side buttons too small. Nov 95

★★★★★ **PaperPort, Visioneer, 415/812-6400, $399.** The paperless office is actually here. This clever combination of elegant hardware and intelligent software makes it easy to capture, organize, and retrieve documents. Once a page is scanned in, you can annotate it; run it through OCR software; or print, fax, or E-mail it. May 95

★★ **Point Pad, Hagiwara Sys-Com, 619/546-9989, $99.** Compact touchpad lets you control the cursor with stylus or finger, but you can't fine-tune cursor response. Oct 95

★★★ **QuePoint, MicroQue, 801/263-1883, $149.** Tired of shoving a mouse around? Slide your finger across this tiny input device to manipulate the cursor with a minimum of movement. May 95

★★★ **Remote Point, InterLink Electronics, 805/484-1331, $199.** Although it may not be a first choice for desktop work, this infrared pointing device is an elegant workaround for users who don't want to (or can't) be tethered to their Macs. Apr 95

★★★★ **Thinking Mouse Macintosh ADB, Kensington Microware, 415/572-2700, $139.95.** A mouse is a mouse is a mouse. Not so. This one has four programmable buttons that you can use—with the accompanying software—to automate such tasks as selecting commands and typing text. May 95

★★★ **Trackball Pro ADB, CH Products, 619/598-2518, $119.95.** Although this trackball is less expensive than the competition's, it falls short in programmability and overall functionality. Sep 95

## MISCELLANEOUS HARDWARE

★★★★ **AirNote 1.0 (1.1), Notable Technologies, 510/208-4400, $299.** Remote-messaging service lets you originate alphanumeric paging messages from your own computer, eliminating both dictation charges and errors in translation. Dec 94

★★★ **Apple PCMCIA Expansion Module, Apple Computer, 408/996-1010, $219.** Well-integrated, well-designed unit offers 500-series users an efficient and easy albeit expensive way to add features to their PowerBooks. If you can overlook the early-adopter prices (a big if), the PC Cards are great expansion options. Mar 95

★★★★ **Colortron, Light Source Computer Images, 415/925-4200, $1195.** Getting the colors on your screen to match those in your output is now easy and affordable, thanks to this hand-held spectrophotometer, which measures transmissive and reflective sources. Jun 95

★★★★ **DayStar PowerPro 601/DayStar Turbo 601, DayStar Digital, 404/967-2077, PowerPro 601 $1599; Turbo 601 $1499.** Squeeze more performance out of your Mac with these impressive 601-based accelerator cards. Sep 95

★ **EAB401P Speakers, Panasonic Communications & Systems, 800/742-8086, $99.** Small, inexpensive speakers provide less-than-state-of-the-art performance. The audio is thin and reedy. Apr 95

★★ **EAB701P Speakers, Panasonic Communications & Systems, 800/742-8086, $249.** The sound of these speakers is thin and slightly harsh, although they are attractive in a high-tech sort of way. Apr 95

★★★★ **MMS557, Audio-Technica USA, 216/686-2600, $149.95.** Among a huge selection of similarly priced speaker systems, these stand out as a best buy. They look good, as well as sound good. Apr 95

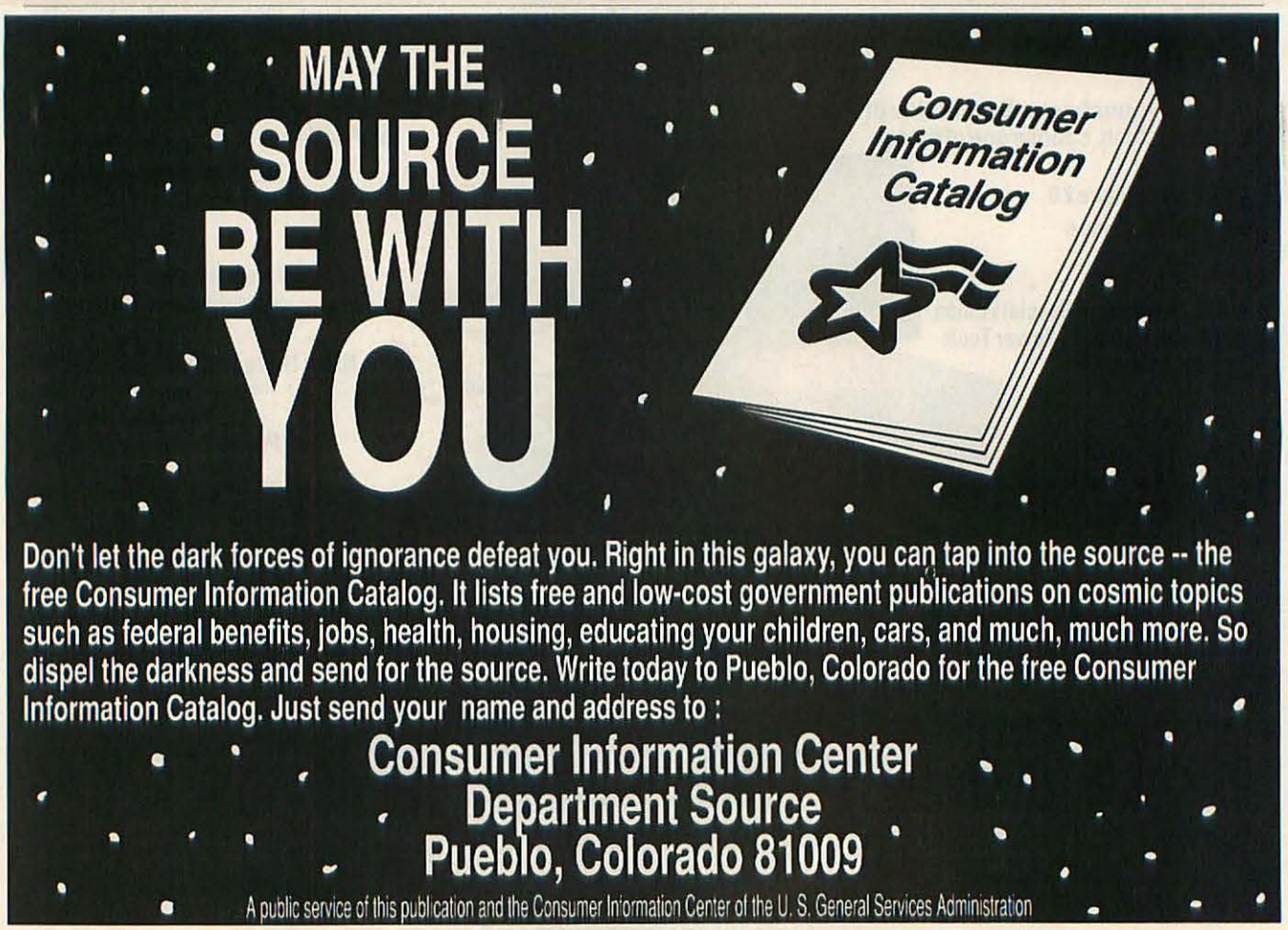
★★★★ **MultiSpin 4Xe, NEC Technologies, 708/860-9500, $515.** With its competitive price, free tech support, and two-year warranty, this quad-speed CD-ROM player is ready to race. Feb 95

★★ **NEC AudioTower, NEC Technologies, 800/632-4636, $99.** Although this speaker system provides a convenient jack for an external CD drive, the sound quality is nothing to shout about. May 95

★★★★ **Photo Engine, Radius, 408/541-6100, $1099.** Photoshop acceleration hardware's suite of four 66MHz 32-bit DSP chips offers sufficient processing power to speed up 25 Photoshop functions on the most sophisticated systems, including Power Macs. Feb 95

★★★★ **Reno Portable CD-ROM Player, MediaVision, 510/770-8600, $349.** Have CD-ROM, will travel. This portable player is lightweight, versatile, and easy to set up; about the only complaint is its short battery life. Jun 95

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Circle 95 on reader service card

# Star Ratings

★★ **Smart Label Printer EZ30, Seiko Instruments USA, 408/922-5800, $199.** This label printer is small, inexpensive, and easy to use. Unfortunately, it's slow, requires special labels, and produces poor-quality text. Nov 95

★★★★ **Vivace, Coda Music Technology, 612/937-9611, $2295.** As an intelligent and endlessly patient accompanist, this music study system for wind instruments may be the best thing that's happened to learning wind literature since the metronome. Jan 95

★★★ **Vivid 3D Pro, NuReality, 714/442-1080, $149.95.** This sound-enhancement system uses the SRS technique to produce 3-D sound from a pair of speakers. While it's great for system sounds and games, it's less impressive for audio CDs. Aug 95

★★★★ **YST-SS1010, Yamaha Corporation of America, 714/522-9240, $349.95.** With a name like YST-SS1010, you have to be good. And it is. This satellite-and-subwoofer speaker system is highly recommended, despite its mediocre manual. Jul 95

## MODEMS/NETWORK HARDWARE

★★ **Cooperative Adapter, Photonics Corp., 408/955-7930, $449.** Infrared network interface is an expensive niche product. Dec 94

★★★ **FastSwitch 10, Grand Junction Networks, 510/252-0726, $6250.** Switched Ethernet hub is a great solution for networks that handle large amounts of data traded peer-to-peer. Dec 94

★★★ **GeoPort Telecom Adapter Kit, Apple Computer, 408/996-1010, $129.95.** Adapter unlocks the software modem built into 680X0AV and Power Macs, providing access to voice, data, and fax services. Our reviewer wanted faster transmission speed, better OCR capability, and a lower price. Oct 95

★★★ **Internet Server Solution for the World Wide Web, Apple Computer, 408/996-1010, $2909.** While it's not an ideal solution for all types of Internet publishing, this hardware-and-software bundle is a starting place for people who want to be publishers, not technicians. Oct 95

★★★★ **OneWorld Combo, Global Village Communication, 408/523-1000, $1499 without modems; $2099 with modems.** It is the very model of a multiuser modem pool. You can't receive a fax but barring that this server's really cool. Sep 95

★★★★ **OneWorld Internet 1.0, 700 Series, Global Village Communication, 408/523-1000, $1699 plus monthly fee.** Users of an office network can connect to the Mother of All Networks with this Internet gateway. It offers E-mail and direct Internet access in an approachable format.. Jun 95

★★★ **Power Class 28.8 Data/Fax Modem, Motorola, 205/430-8000, $395.** Superior connection speeds and easy setup are attractive, but this modem comes with mediocre fax/telecommunications software and doesn't support V.Fast connections. Oct 95

★★★★ **TelePort Platinum, Global Village Communication, 408/523-1000, $279.** If you want V.34 (28.8-Kbps) data and 14.4-Kbps faxing capability, incoming-call recognition, and an answering machine—all over a single telephone line—this reliable fax modem has it all covered. Aug 95

## PRINTERS

★★★★ **Apple Color StyleWriter 2200, Apple Computer, 408/996-1010, $419.** Inexpensive, lightweight color ink-jet printer is ideal for creating color presentations when you're on the road. Nov 95

★★★★ **Apple Color StyleWriter 2400, Apple Computer, 408/996-1010, $525.** Economical, QuickDraw-based color ink-jet printer offers gorgeous color output plus fast black-and-white printing. If you don't need DOS/Windows compatibility, it's a good buy. Apr 95

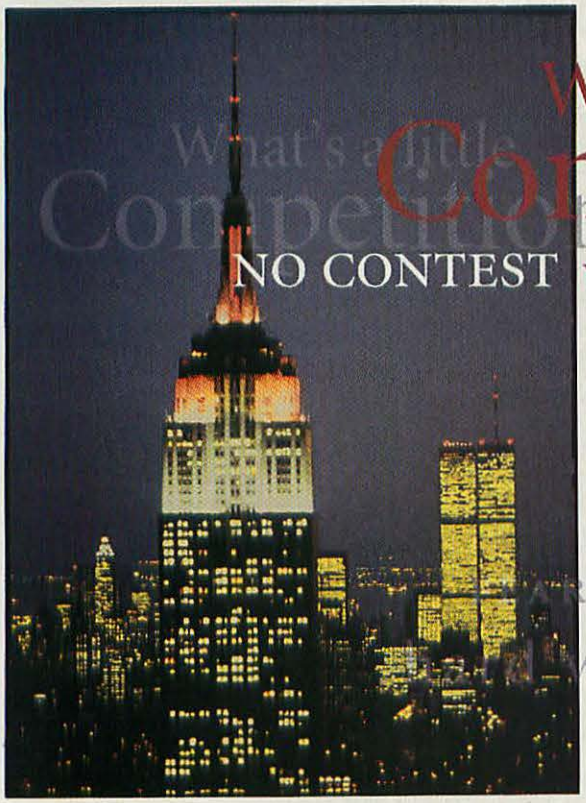
★★★★ **HP LaserJet 5MP, Hewlett-Packard, 800/752-0900, $1299.** This laser printer meets the high demands of small businesses and home offices with features such as 600-dpi resolution, support for Adobe PostScript Level 2, and automatic-input switching between DOS/Windows machines and Macintosh networks. Jul 95

★★★★ **LaserWriter 16/600 PS, Apple Computer, 408/996-1010, $2399.** If speed is what you need, this fine printer is it. The price is reasonable. Mar 95

★★ **Nikon Coolprint, Nikon Electronic Imaging, 516/547-4355, $2350.** Color dye-sub printer is a good way to make small color proofs of digital images (only A6 paper is supported). It's fast, but print quality suffers from a low resolution and poor color matching. Sep 95

★★★ **Phaser 140, Tektronix, 503/627-7111, $1695.** If you're looking for a capable color printer for a

*continues*

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Inside Select Phone are 95 million reasons why thousands like you are using Select Phone everyday to look up old friends and generate new business.





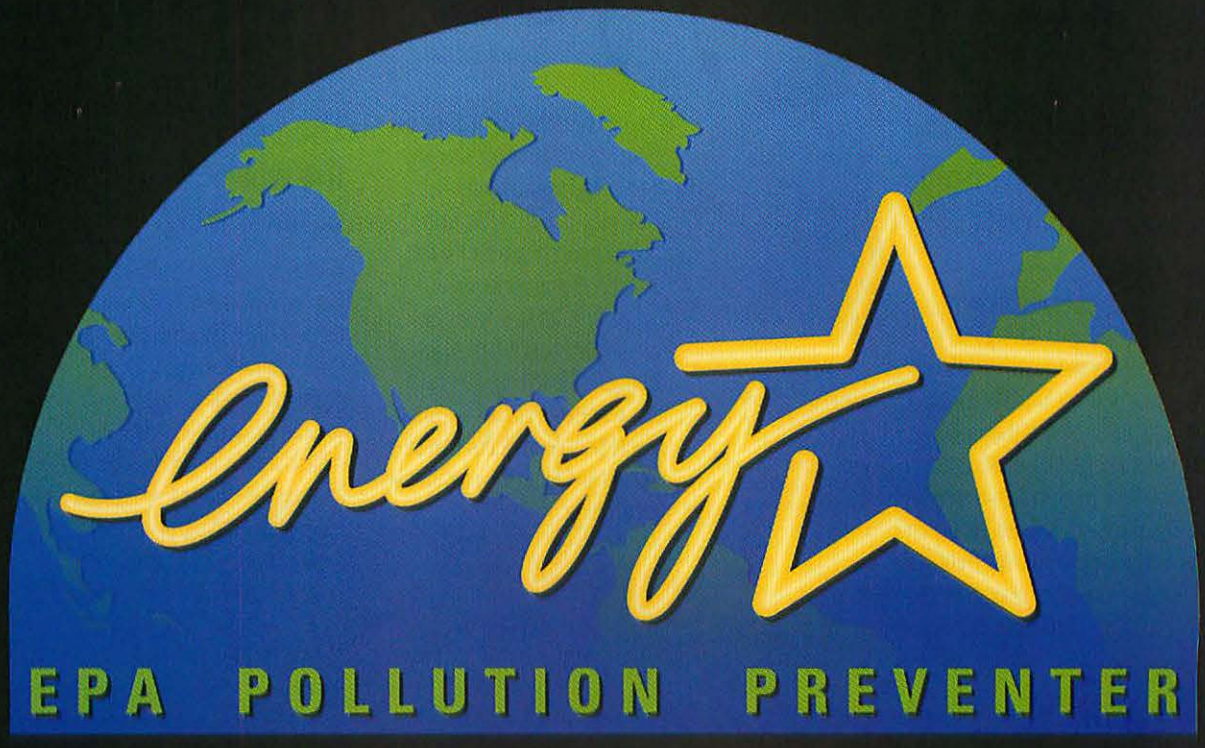

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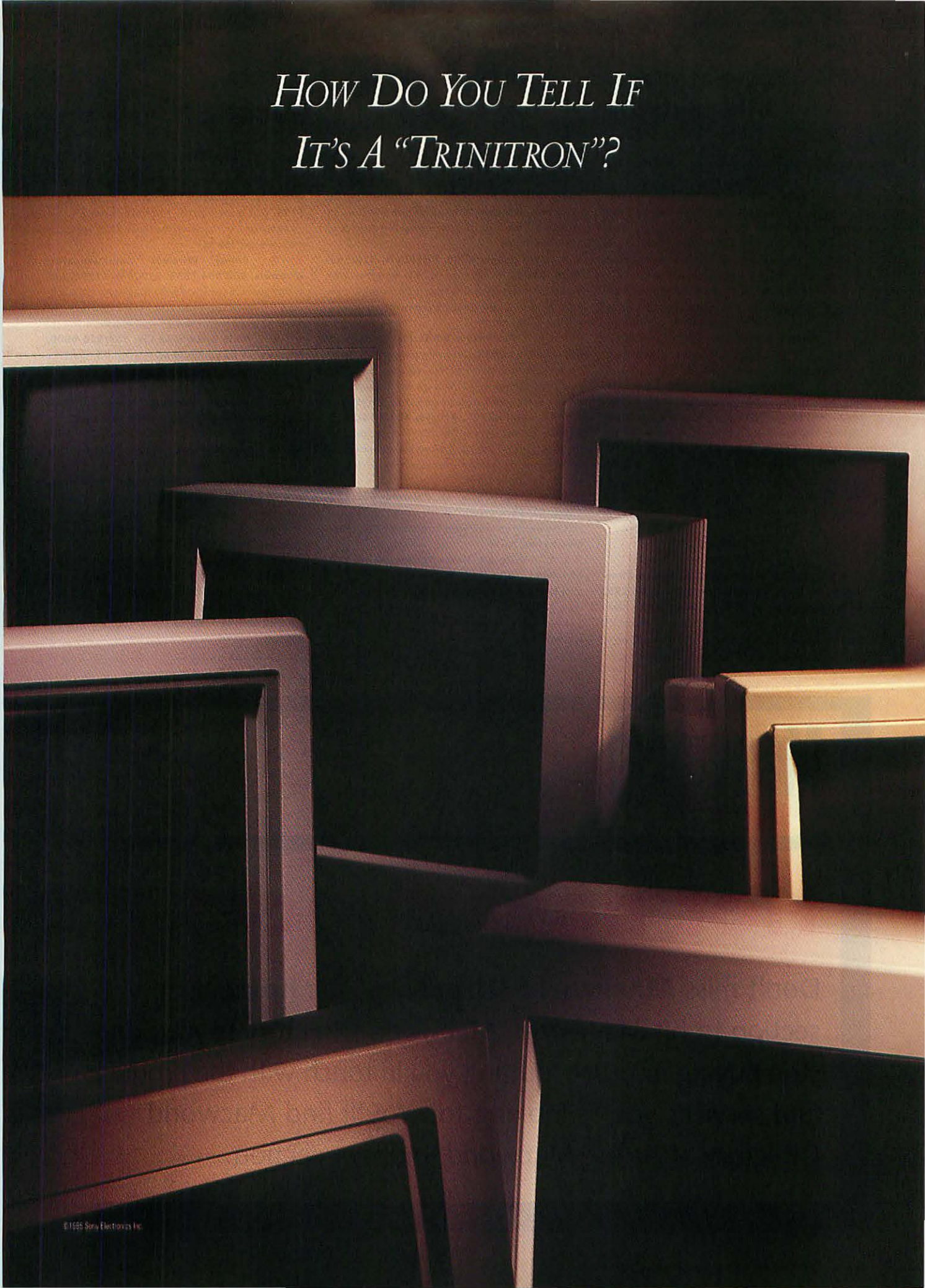

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# How Do You Tell If It's A "Trinitron"?



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# Star Ratings

small workgroup, this ink-jet is a great choice. It provides only 17 resident fonts, however. Apr 95

★★★ **Pictura 310, Fargo Electronics, 612/941-9470, $4995; optional Adobe Level 2 PostScript package $795.** This tabloid-size thermal-wax and dye-sub printer is affordable and produces acceptable print quality, but it's not to dye for. Its color-matching capabilities don't measure up to those of its competitors. Jul 95

★★★ **PrimeraPro, Fargo Electronics, 612/941-9470, $1895.** The photo-realistic output of this thermal-wax and dye-sublimation printer beats that of any other printer in the price range. But with expensive consumables and slow print time, it's best suited for routine thermal-wax use and occasional dye-sub work. Jan 95

★★★★ **StyleWriter 1200, Apple Computer, 408/996-1010, $269.** Newest model of Apple's inexpensive ink-jet printer offers improved print quality, better halftones, tiled layouts, and four new fonts. Sep 95

★★★★ **Stylus Color, Epson America, 310/782-0770, $699.** This color ink-jet printer is no speed demon at 720-dpi resolution, you need special paper for hi-res output, and it offers no color correction. But who cares? The print quality is superb and the price is reasonable. May 95

## SCANNERS

★★★ **Fujitsu ScanPartner Jr., Fujitsu Computer Products of America, 408/432-6333, $499.** Compact scanner with good OCR software makes converting hard-copy documents to editable text a snap. It's an economical and fuss-free scanning solution, but its page-feeder doesn't offer the flexibility of a flatbed scanner. Jul 95

★★★★ **HP ScanJet 3c, Hewlett-Packard, 208/323-2551, $1179.** Higher resolution (600 dpi) and a broader dynamic range (30 bits) distinguish this color scanner from its predecessor. The only number that didn't go up is the price. Oct 95

★★ **Pro Imager 4000, PixelCraft, 510/562-2480, $2995.** This midrange scanner delivers excellent highlight detail but produces a lot of noise in shadow areas. It doesn't measure up to similarly priced competitors in speed or image quality. Jun 95

★★★★ **Pro Imager 8000, PixelCraft, 510/562-2480, $12,995.** Demanding prepress users will like this scanner's tonal sensitivity, high resolution, large image area, and impressive speed. Although its color-adjustment software needs work, this is a superb scanner. Jun 95

★★★ **Reli 4830T, Relisys, 408/945-9000, $1699.** The good: high-quality scans, midrange price; lots of bundled software. The bad: slow performance, quirky scanning software. The upshot: If you can live with the cons, this scanner is a bargain. Jun 95

★★★★ **SprintScan 35, Polaroid, 617/386-2000, $2495.** Compact, efficient scanner offers a cost-effective way to transfer images from 35mm slides or negatives to a Mac. Jun 95

★★★ **Vista-S8, Umax Technologies, 510/651-8883, $995 (LE+); $1095 (Pro+).** This 24-bit color flatbed scanner has a lot of useful features for its low price, including crisp line-art scans and speedy previews. It's a bargain if you can overlook its slow OCR scans and some scanning-software bugs. Jul 95

## SYSTEMS/STORAGE

★★★★ **Brainstorm Accelerator for the Macintosh SE, Brainstorm Products, 415/988-2900, $199.** Your SE will never be a Power Mac or even a IIsi, but if your budget won't buy a new Mac, you can't do better than this accelerator. Mar 95

★★★ **Envoy Wireless Communicator, Motorola, 800/894-7353, $1000 to $1500.** With its intelligent mail agents and well-integrated RadioMail software, this Magic Cap–based PDA was our reviewers' first choice for sending and receiving E-mail. Aug 95

★★★ **Joule System, La Cie, 503/520-9000, Price varies by component.** Plug-and-play tower lets you stack drives atop a base unit, making it easy to buy extra storage. Feb 95

★★★ **Marco Wireless Communicator, Motorola, 800/894-7353, $900 to $1400.** This Newton OS–based PDA includes a radio modem. The RadioMail service offers E-mail, paging, outgoing faxes, and a news service, but it's pricey. Aug 95

★★★ **Master CD Pro, MicroNet Technology, 714/453-6000, $4995.** With support for multiple formats, this quad-speed, multisession, recordable CD-ROM drive is a good tool for professional CD production. It ain't cheap, though. Aug 95

★★★ **MessagePad 120, Apple Computer, 408/996-1010, $599, 2MB model $699.** Apple's PDA offers about three times the storage space of the other PDAs tested, and its design is great, but handwriting recognition still needs work. Aug 95

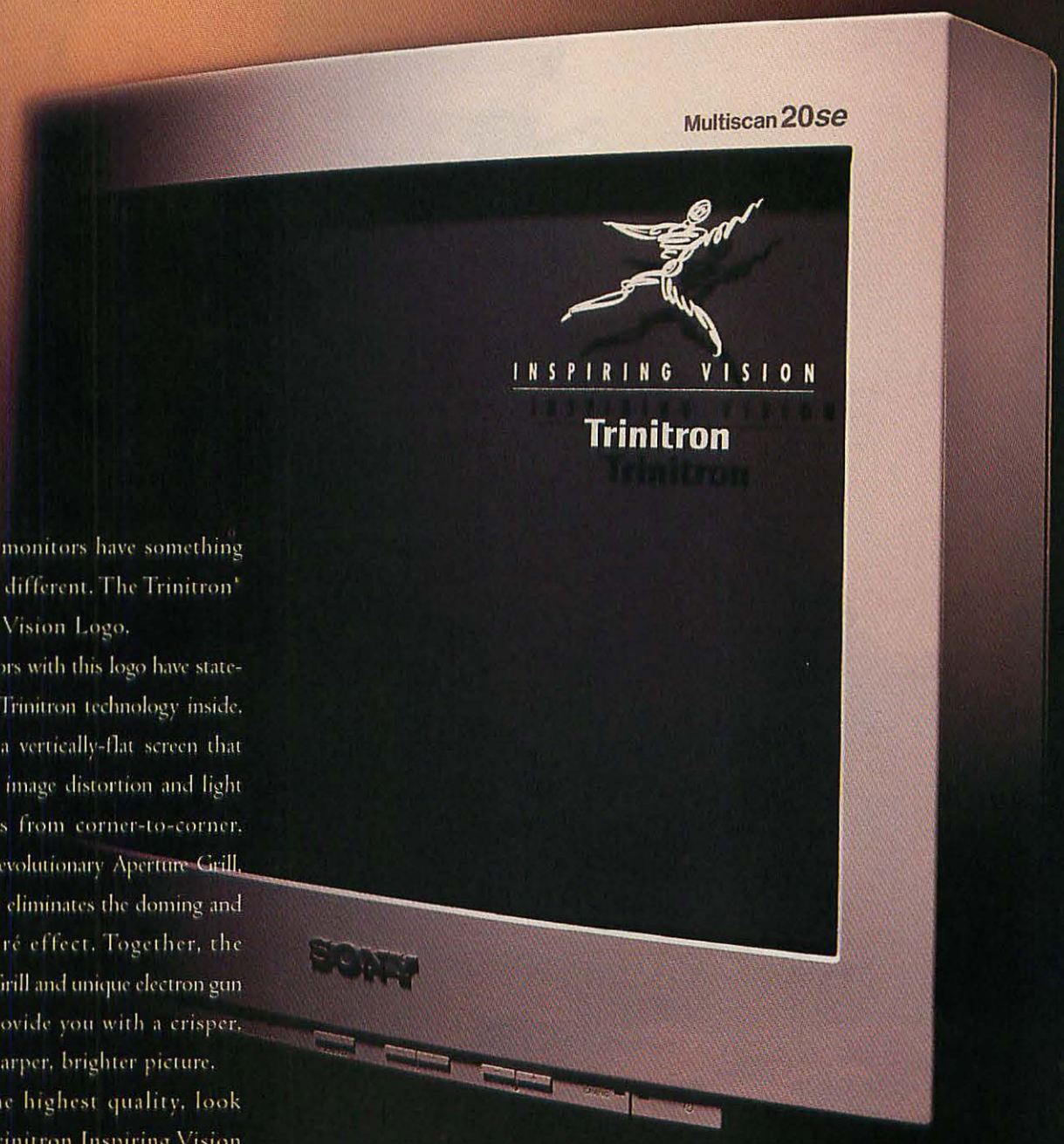
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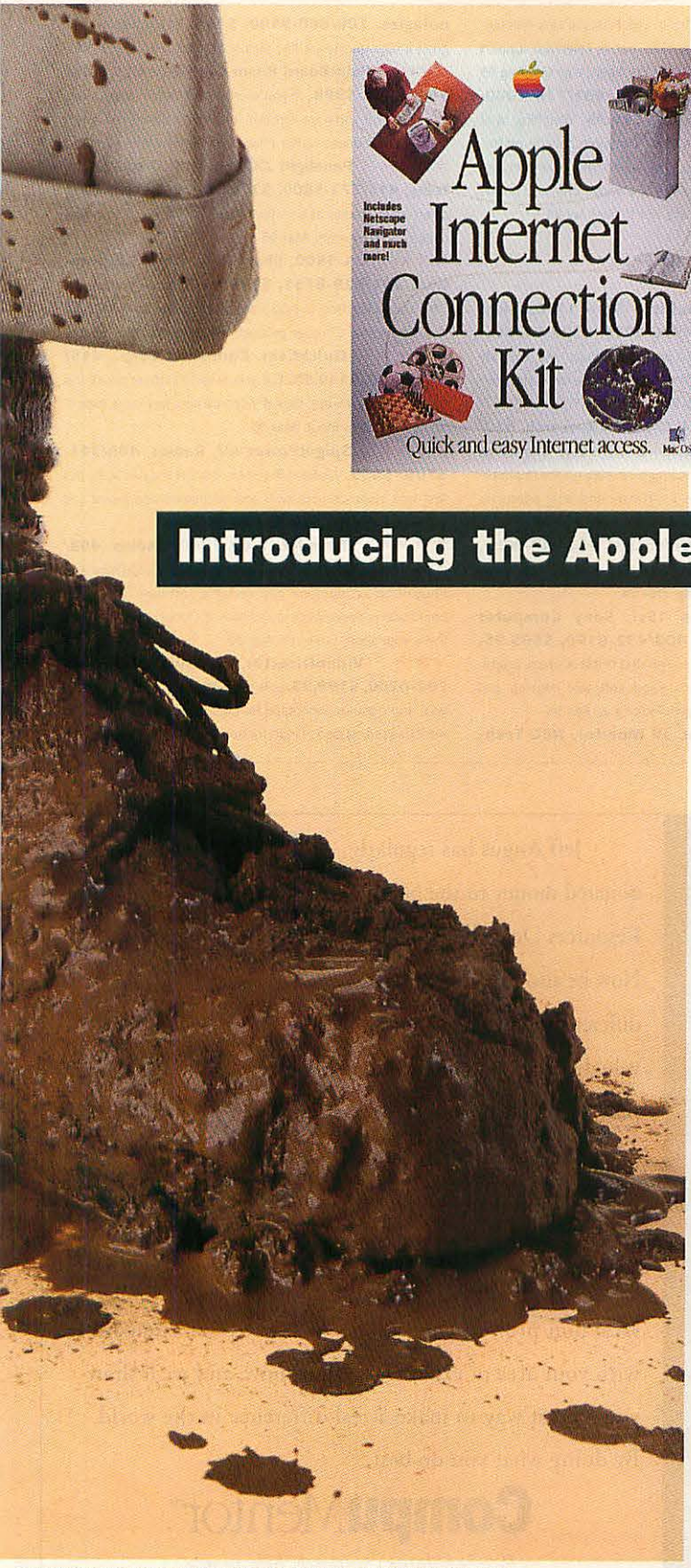
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# Until now, the on-ramps to the Inte



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# net have been under construction.






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## Introducing the Apple Internet Connection Kit.

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**Circle 197 on reader service card**

# Star Ratings

★★★★ **Power 100, Power Computing, 512/258-1350, $2599 (base model).** The first Macintosh clone offers all the power of a Macintosh 8100/100 for about $700 less. It offers the speed, expandability, functionality, and compatibility Macintosh users expect, with the customer support and prices we've wanted for so long. **Aug 95**

★★ **PowerBook 150, Apple Computer, 408/996-1010, $1449.** Fast, lightweight portable is minimalist in the extreme, with no video-out, ADB, Ethernet, or microphone. The price is less minimalist. **Dec 94**

★★★ **Power Macintosh 8100/110, Apple Computer, 408/996-1010, $6379.** High-end users who have invested heavily in NuBus cards can protect their investment with this top-of-the-line Power Mac. **Mar 95**

★★★ **Power Macintosh 9500/132, Apple Computer, 408/996-1010, $5799.** If you need speed, expansion, and a massive amount of memory, this is the Mac for you. But with no built-in video, the limited availability of PCI cards, and RAM slots that are hard to reach, this one's a poor choice for general use. **Oct 95**

★★ **RCD-1000, Pinnacle Micro, 714/727-3300, $1695.** The software for this CD-Recordable drive is easy to use, but it's too unreliable to use as a day-to-day backup system. **Jun 95**

★★★ **SledgeHammer8000FT, FWB, 415/325-4392, $23,599.** This fault-tolerant Level 5 RAID array will help you maintain constant access to your stored information. Our reviewer couldn't tolerate a few of its faults, however, including its lack of support for RAID 3 . **Sep 95**

★★★ **Sony Magic Link, Sony, 800/571-7669, $699.95.** Using this PDA is a breeze, but only a handful of apps have been developed for it. The Personal Link messaging service is relatively inexpensive, but its Telescript support is limited to other devices that use the Magic Cap OS. **Aug 95**

★★★★ **Zip Drive, Iomega, 801/778-1000, $199.95; 100MB cartridge $19.95.** Weighing in at about a pound, this external drive combines speedy performance, convenience, and economy in an attractive package. It uses 100MB cartridges the size of a floppy disk, and boasts near hard-drive speeds. What's not to like? **Jul 95**

## VIDEO/DISPLAY

★★★★ **Apple Multiple Scan 15 Display, Apple Computer, 408/996-1010, $509.** The tridot tube of this 15-inch monitor provides a sharp and accurate image, but reflects some glare. The built-in stereo speakers reproduce sound nicely. **Feb 95**

★★★ **EAsycolor 24/1360, EA Research, 510/867-0967, $1699.** Video board offers Photoshop CMYK–mode acceleration and high-res support for multisynchronous monitors. Minimal software and only adequate QuickDraw acceleration, but it's affordable. **Aug 95**

★★★★ **FlexCam, VideoLabs, 612/988-0055, $595.** Small, unobtrusive desktop video camera has a flexible gooseneck for positioning. **Dec 94**

★★★★ **Multiscan 15sf, Sony Computer Peripheral Products, 408/432-0190, $569.95.** Trinitron monitor has a flat screen that displays sharp, bright, and accurate images. With good antiglare coating and adjustable image tilt, it's worth looking at. **Feb 95**

★★★★ **MultiSync 3V Monitor, NEC Technologies, 708/860-9500, $495.** Bright display and great image quality—a fine picture at a good price. **Feb 95**

★★★ **PaintBoard Prism GT, RasterOps, 408/562-4200, $999.** If you want QuickDraw acceleration and plentiful software options, this video board is a good choice, but it doesn't offer Photoshop acceleration. **Aug 95**

★★★★ **Panelight ZX, Panelight Display Systems, 415/772-5800, $3995 to $4695.** LCD panel offers vivid images at a comparatively low price. It's a great choice for presenters. **Mar 95**

★★★ **QA-1500, Sharp Electronics Corporation, 201/529-8731, $5795.** LCD panel's display is crisp and flicker-free, but placing a presentation on its PC Card is cumbersome. Cheaper products are available. **May 95**

★★★★ **QuickCam, Connectix Corp., 415/571-5100, $149.95.** For as little as $99 (street price), this tiny, fun, easy-to-use, digital video camera lets users experiment with video input. **Mar 95**

★★★★ **SpigotPower AV, Radius, 408/541-6100, $999.** Make full-screen, 30-fps movies with this first-rate video-compression-and-decompression board and accompanying JPEG software. **Jun 95**

★★★★ **Thunder IV GX 1360, Radius, 408/434-1010, $2999.** With its impressive QuickDraw and Photoshop acceleration and versatile software, this video board was our reviewer's first choice. It's more expensive than the competition, however. **Aug 95**

★★★ **VideoDirector 1.5, Gold Disk, 408/782-0200, $199.95.** Low-end video-edit system can log, edit, and organize videotape footage, copying from a source deck to a record deck. Good for nonprofessionals. **Jun 95**

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**Circle 8 on reader service card**

# Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

**Selected and edited by Charles Barrett**

The following listings include both time-sensitive promotions and open-ended offers being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in *Macworld's Reviews* (products rated ★★ or lower are not eligible for inclusion), have been selected as an **Editors' Choice**, or have won a **World-Class** award. In some cases, the editorial evaluation quoted is for an earlier product version. The ◀ symbol indicates that the product is Power Mac related. Except where otherwise indicated, prices given are suggested retail prices.

When placing an order, please mention that you saw the offer in *Macworld*. Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld*, 501 Second St., San Francisco, CA 94107).

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the *Streetwise Shopper* editor with particulars.

## BUNDLES

◀ **Avid VideoShop 3.0 + Digital Chisel 2.0** Pierian Spring Software's $159.95 Digital Chisel educational multimedia authoring tool (Jun 95 ★★★ for version 1.2) is now being included with Avid Technology's $395 QuickTime video-editing program (Feb 94 ★★★ for 680X0 version 2.0). This bundle is available through Pierian Spring Software for $149 (five-user license is $499; unlimited-user site license is $1495). Call 800/472-8578 to order.

**BrioQuery 3.5 + SequeLink** Brio Technology is including Techgnosis's SequeLink database middleware on CD-ROM with its $595 multidimensional analysis and data-access product for data warehouses. A key to activate SequeLink connections for two concurrent users is available for $495 (regularly priced at a minimum of $1495 for up to five users) to BrioQuery customers who call Techgnosis. Call 800/730-8351 for more information.

**FileMaker Pro 2.1 + ◀ ClarisImpact 2.0 + ClickBook 1.1 + Apple Personal Diagnostics** Claris is offering a $149 Small Business Bundle for Macintosh consisting of its $149 flat-file database (Jan 93 ★★★★ for FileMaker Pro 2.0) and $129 ClarisImpact charting and diagramming application (Jun 94 ★★★★ for 680X0 version 1.0), BookMaker's $69.95 ClickBook print utility for formatting documents into double-sided booklets (Nov 94 ★★★), and Apple's software for monitoring computer performance. FileMaker templates to help manage small-business tasks and a multimedia presentation on how to start your own business are also included. Two $49 and $99 bundles are available for home and education users. Call 800/544-8554 for more information. *Offer good through at least 12/31/95.*

◀ **Helix Express 3.5 + PowerMover** Helix Technologies is offering the new $99 PowerMover, a tool for importing data into and exporting it out of Helix Express, for $49 when purchased with its $589 relational database (Sep 95 ★★★★ for 680X0 version 3.03). Call 800/364-3549.

**In Control 3.5 + FastPace Instant Contact 1.1** Attain is offering this bundle—which consists of its $149 personal planner and organizer (Oct 94 ★★★★ for In Control 3.0.4) and $49 professional contact manager (Jan 95 ★★★ for FastPace version 1.0)—for $99. Call 800/925-5615 to order. *Offer expires 12/31/95.*

◀ **Norton Utilities 3.1 + Speed Doubler 1.0** MacConnection is offering a free copy of Connectix's $99 Speed Doubler, a 680X0 emulator that runs nonnative code faster than the emulator built into first-generation Power Macs, to customers who purchase Symantec's $99.95 suite of utilities (Feb 95 ★★★ for 680X0 3.1 version). Call 800/800-1111 to order (#23957). *Offer expires 12/31/95.*

**Supra Simple Internet** Supra is offering a $210 bundle that consists of an external 28.8-Kbps fax modem; Supra Mosaic, a version of the Mosaic Direct World Wide Web browser; Supra's Faxilitate fax software; a CD-ROM Internet tutorial containing Jamsa Press's Official Internet Directory and a searchable list of URLs for thousands of Web sites; and membership to CompuServe's Seattle Interserv access service. Customers who already own a Supra modem can purchase the bundle's software for $49.95. Call 800/727-8772.

## SPECIAL DISCOUNTS/REBATES/ TRIALS/OFFERS

**DrawTools; Intellihance 2.0; PageTools 2.0** Extensis is offering three $149 add-on products for $99.95 each. DrawTools is an integrated set of 17 filters for Adobe Illustrator and Macromedia FreeHand (versions 5.0 or later). Intellihance (Sep 95 ★★★ for version 1.0), which is compatible with Photoshop (version 2.5.1 or later) and other applications that support its plug-ins, is a tool that automatically adjusts image contrast, brightness, saturation, and sharpness. PageTools 2.0 (Dec 94 ★★★★ for version 1.0) is a collection of 18 plug-ins for PageMaker 5.0 and 6.0. Call 800/796-9798 to order direct and for more information.

**Graphics Tools** DeltaPoint is offering a special version of its multimedia image browser free of charge to World Wide Web users. This version of its image management and graphics utility has the ability to catalog, capture, view and convert graphics files, as well as catalog and play QuickTime movies and sound files. Available for downloading from DeltaPoint's Web site (**http://www.deltapoint.com**). *Offer good through at least 12/31/95.*

**Letraset Fontek Fonts** Letraset is offering the opportunity to try out its entire collection of Fontek fonts, plus clip-art and background photography, on screen by using its Ripper Web page on the World Wide Web. In addition, each month you can download a different font free of charge from the site, as well as try out demo versions of Envelopes for Illustrator and FreeHand (**http://www.esselte.com/letraset/**).

◀ **MapInfo 3.0** MapInfo is offering this $1295 mapping program (Oct 95 ★★★★), with advanced geographic-analysis and geocoding tools, to academic users for $225. Offer is limited to teachers, students, and schools. Call 518/285-6000 for more information.

◀ **Microsoft Office 4.2.1** Microsoft is offering a $50 rebate to purchasers of this $499 integrated software package after 10/1/95, provided they also buy one of the following products at the same time: Microsoft Bookshelf 95, a $69.95 set of reference tools including dictionary, thesaurus, and almanac; Microsoft Encarta 95, a $99.95 interactive multimedia encyclopedia; or ◀ Connectix's $99 RAM Doubler 1.5, a utility to enhance memory management (May 94 ★★★★ for 680X0 version 1.0.1). *Offer expires 12/31/95.*

◀ **MiniCad 6** The Software Source is offering a free copy of MacAcademy's $49 MiniCad Volume 1 video with the purchase of Graphsoft's $795 CAD software package (Nov 94 ★★★★ for MiniCad 5) for $319. Offer is limited to students, teachers, and schools. Call 800/289-3275 for more information. *Offer expires 12/31/95.*

◀ **Notes Express 3.31** An agreement between Apple Computer and Lotus Development allows corporate Power Mac owners to receive a free CD-ROM containing the entry-level client for Lotus's cross-platform groupware system. This software—which provides E-mail, a searchable reference document library, a news database, a shared discussion database, a company phone book, and customer and service request-tracking systems—requires a $275 Notes 3.3 server. Call 800/346-1305 for more information.

**SofTrack** On Technology is offering a free 30-day trial of this $495 (50-user) to $3995 (1000-user) NetWare Loadable Module (NLM) for metering Windows, DOS, OS/2, and Macintosh applications. SofTrack monitors the number of copies of a software application in use on each file server across a local area network. It discloses who is using a copy, when, and for how long. Call 800/406-5828.

**SummaJet 2 Series Plotters** Summagraphics is offering a $345 (D-size) or $395 (E-size) plotter stand free of charge to customers who purchase a SummaJet 2C color or SummaJet 2M monochrome large-format D- or E-size ink-jet plotter before the end of the year. Claim form, copy of invoice, and serial number must be submitted to Summagraphics by 1/15/96 to qualify. Call 800/444-3425 for more information. *Offer expires 12/31/95.*

**SuperScript and Silentwriter Printers** NEC Technologies is offering rebates on its entire line of printers. Rebates are $100 for the SuperScript 610 plus, 660, and 660i; $150 for the Silentwriter 640; and $200 for the SuperScript Color 3000. Current estimated street prices are $399 (610 plus), $449 (660), $699 (660i), $735 (640), and $999 (3000). Mail-in coupons (available at participating reseller outlets or by calling 800/366-0476) must be postmarked by 2/29/96 (request document 7). *Offer expires 1/15/96.* m

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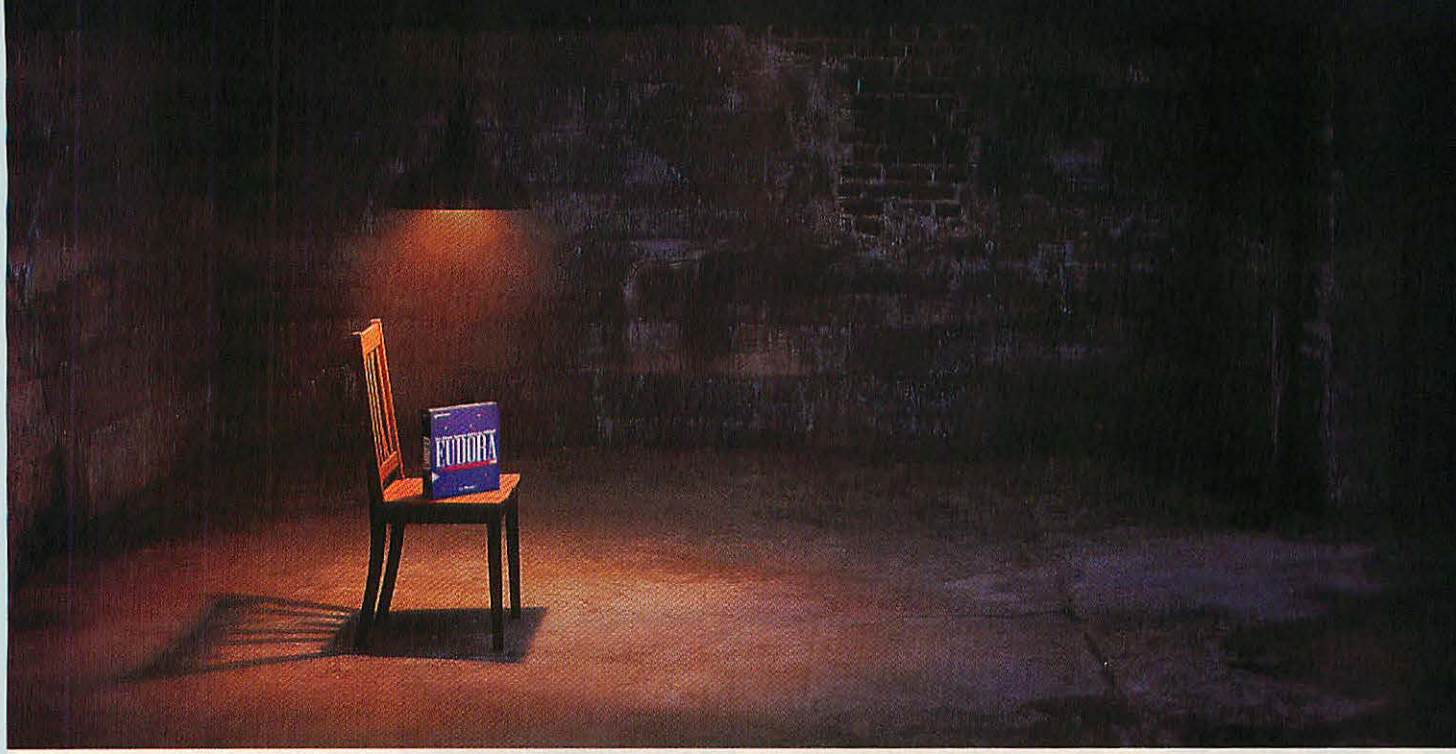
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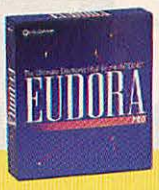
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Circle 97 on reader service card

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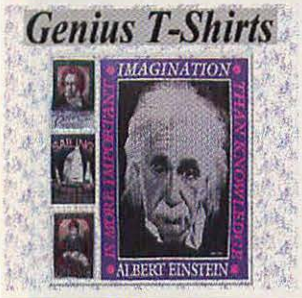

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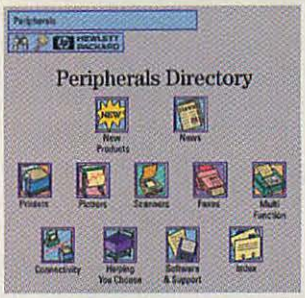
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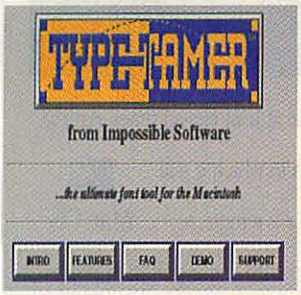
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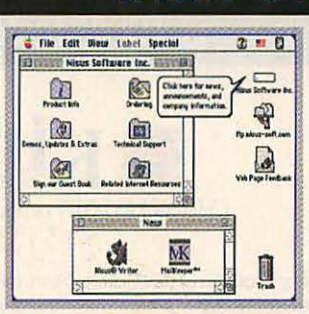
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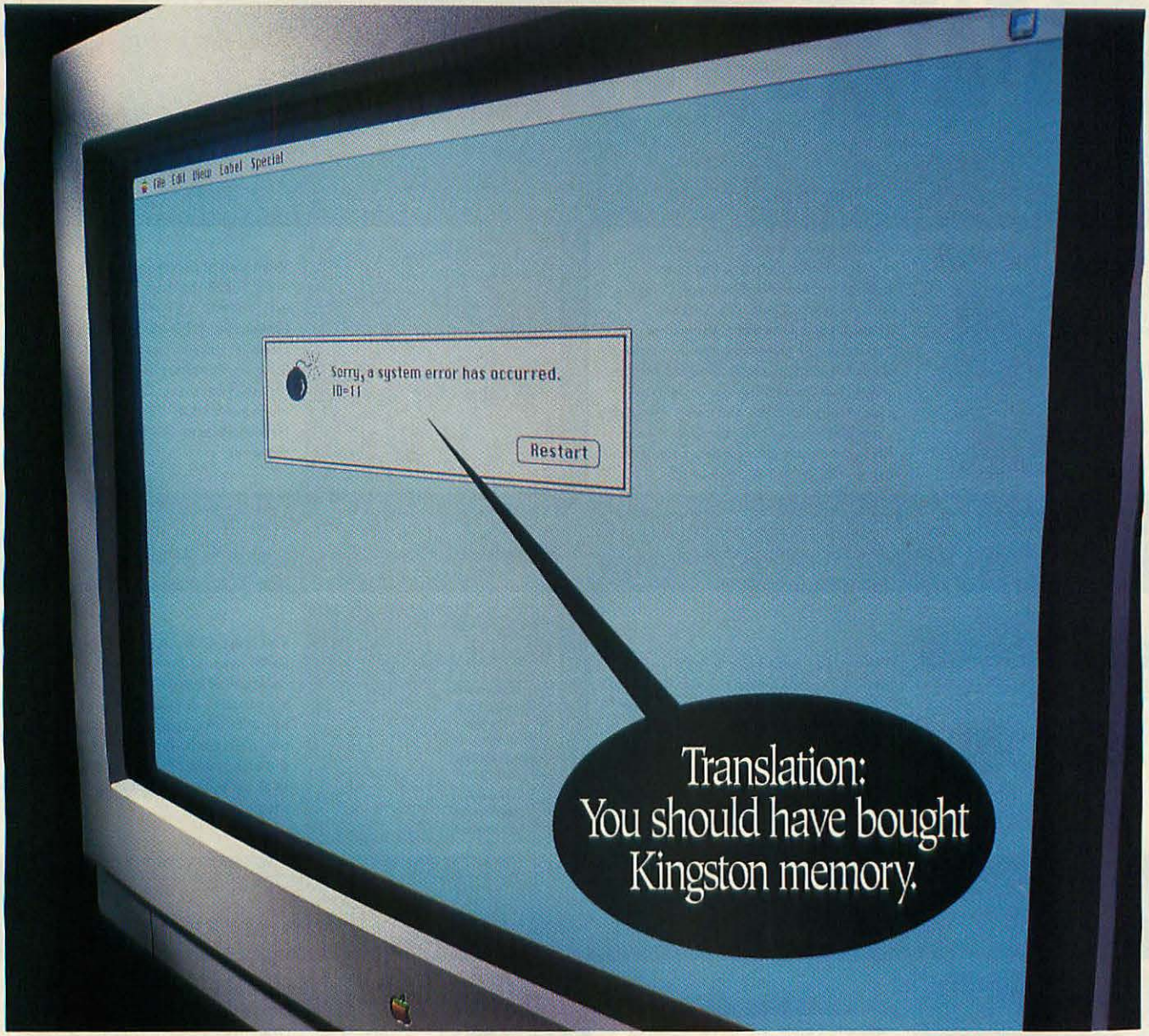
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# Macworld

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### Please answer these questions so that we may better serve you.

A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)

01 ❑ 1000+
02 ❑ 999 - 100
03 ❑ 99 - 25
04 ❑ Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)

05 ❑ Apple Workgroup Servers/ Mac Quadra-series
06 ❑ Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
07 ❑ Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
08 ❑ Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

| | C | D |
|---|---|---|
| 500+ | ❑ 09 | ❑ 15 |
| 499 - 100 | ❑ 10 | ❑ 16 |
| 99 - 50 | ❑ 11 | ❑ 17 |
| 49 - 10 | ❑ 12 | ❑ 18 |
| 9 - 1 | ❑ 13 | ❑ 19 |
| None | ❑ 14 | ❑ 20 |

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)

21 ❑ Initiate/Determine need for product/capabilities/features
22 ❑ Evaluate, recommend, or approve brands/models
23 ❑ Evaluate, recommend, or approve purchase source
24 ❑ Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)

25 ❑ $1 million or more
26 ❑ $999,999 – $500,000
27 ❑ $499,999 – $100,000
28 ❑ $99,999 – $50,000
29 ❑ $49,999 – $10,000
30 ❑ Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)

31 ❑ Business software (Word processing, spreadsheet, database, etc.)
32 ❑ Graphics/publishing software
33 ❑ Monitors/displays
34 ❑ Printers/scanners
35 ❑ Networking/communications hardware and/or software
36 ❑ Multimedia/AV hardware and/or software
37 ❑ Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)

38 ❑ Computer Reseller/VAR/VAD
39 ❑ MIS/DP/IS/Network Management
40 ❑ Engineering
41 ❑ R&D/Scientific
42 ❑ Corporate/General Management
43 ❑ Accounting/Finance
44 ❑ Marketing/Sales/PR/ Communications
45 ❑ Art/Design/Creative Services

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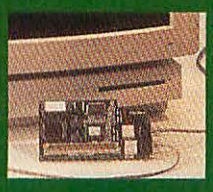
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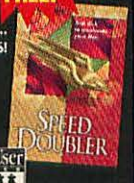
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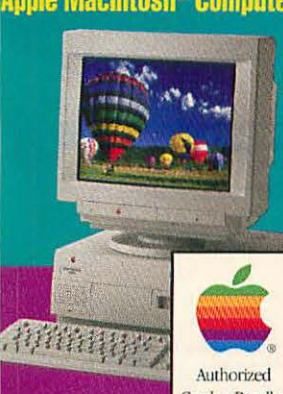


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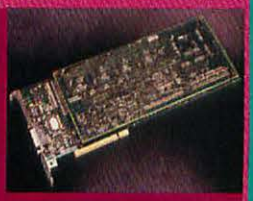
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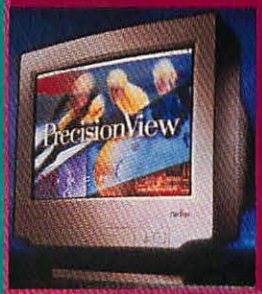
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- LED light, headphone jack
- Volume control
- Light weight
- CharisMac's CD AutoCache driver software
- ONE Year Warranty




30 DAY — Mac OS COMPATIBLE

### ClubMac 4X CD-ROM C109 9546

- 600KB/sec data transfer rate
- 190ms average access time
- Caddyless design
- LED light, headphone jack and RCA jacks
- CharisMac's CD AutoCache driver software
- ONE Year Warranty




30 DAY — Mac OS COMPATIBLE

### CLUBMAC CD-ROM BUNDLE $100

**CD-ROM BUNDLE**

- Grolier1995 Multimedia Encydopedia
- U.S. Atlas & World Atlas
- San Diego Zoo Animals
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* with any CD-ROM Drive purchase

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### ClubMac DAT Backup Drives

C109 5011 $699

Mac OS COMPATIBLE

BUNDLED WITH Retrospect v3.0 Backup Software




TWO Year Warranty

Verbatim



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V010 1018 Verbatim 90M Cartridge ..... $11
V010 1043 Verbatim 120M Cartridge ..... $24

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V010 1021 Verbatim 1.3GB Optical Cartridge ..... $82
V010 1012 Verbatim 230MB Optical Cartridge ..... $29
V010 1013 Verbatim 230MB Formatted Optical ..... $32
V010 1009 Verbatim 128MB Optical Cartridge ..... $27

**CD-R MEDIA**

V010 1022 CD Recordable Disc 74 min ..... $10

### ClubMac 5.25" OLYMPUS 1.3GB

- 5.25" Olympus Optical Mechanism
- 29ms ave. seek time
- 3,500 RPM rotational speed
- Cartridge Included




### CLUBMAC 3.5" OLYMPUS 230MB

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| D040 1043 | 100 MHz PowerPro 601 | $1199 |
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| R013 1020 | VideoVision Studio 2.5.1 Upgrade (0505) | $1,759 |
| R013 1026 | SpigotPower AV (DV1630) | $759 |

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| T040 1001 | Targa 2000 for the Macintosh | $4495 |

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| N026 1015 | 15 XV15 Monitor | $449 |
| N026 1006 | 15 XE15 Monitor | $569 |
| N026 1005 | 15 XP15 Monitor | $599 |
| N026 1022 | 17 XV17 Monitor | $729 |
| N026 1009 | 17 XP17 Monitor | $1,049 |
| N026 1010 | 21 XE21 Monitor | $1,779 |
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| R016 1032 | PrecisionView ™ 21 | $2,299 |
| R016 1009 | IntelliColor Display/20e | $2,199 |
| R016 1007 | PrecisionColor Display/17 | $1,049 |
| R016 1030 | PrecisionView 17 | $979 |

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| S106 1015 | 14" Trinitron CPD-1425 832 x 624 | $325 |

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| H047 1003 | DeskJet 1200C/PS PostScript Printer | $1585 |
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| V025 1002 | PaperPort for Macintosh | $347.50 |

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| I040 1006 | Zip Cartridge (100MB) | $19.99 |
| I040 1011 | Zip Cartridge (3 pack) | $49.95 |

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NEC

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| A120 1010 | 10BaseT FriendlyNet Media Adapter | $39.95 |
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| S140 1007 | SupraFAXModem 28.8 MC | $224 |
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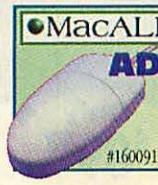


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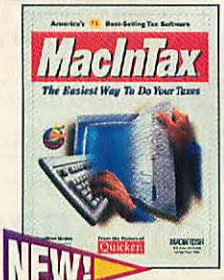
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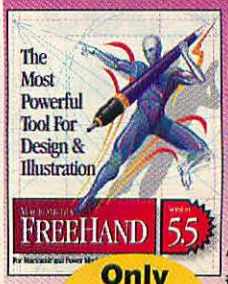



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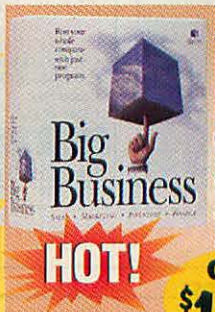
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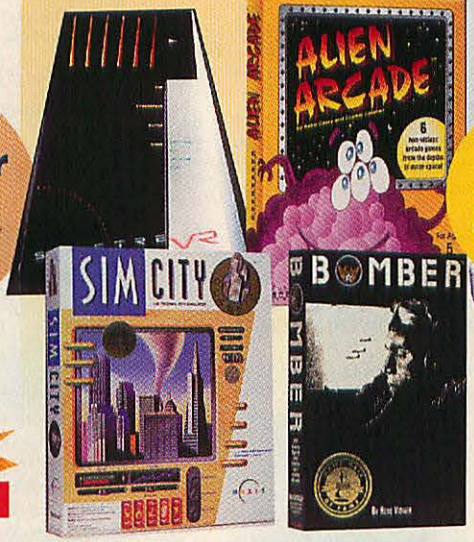
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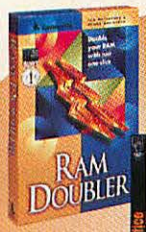
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| ViewSonic 20G | 1750 | 61 |
| Radius IntelliColor/20e | 1829 | 64 |
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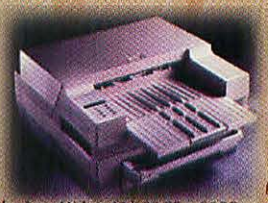
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| LaserWriter Select 360 | 1165 | 39 |
| Personal LaserWriter 320 | 745 | 26 |
| Color StyleWriter 2200 | 359 | 13 |
| StyleWriter 1200 | 239 | 10 |
| GCC Elite XL1208 | 4269 | 149 |
| GCC Elite XL616 | 2599 | 91 |
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| Radius P'Color Pro 24X | 599 | 21 |
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| Agfa Arcus II w/transp. | 2295 |
| HP ScanJet IIIcx | 939 |
| UMAX Vista S6 Pro | 739 |
| UMAX Vista S8 Pro | 869 |
| UMAX 1260 Pro | 919 |
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| Microtek Scanmaker III | 2675 |
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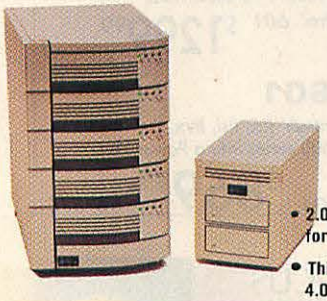
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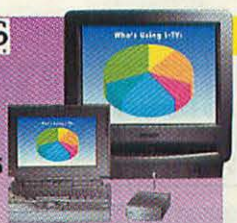


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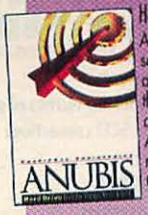
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| APS Q 840[3] Quantum 840 Trailblazer | 811MB | 249.95 | 349.95 |
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| APS ST 1.0[5] Seagate ST 31230N Hawk | 1010MB | 399.95 | 499.95 |
| APS MS 1.0[5] Micropolis 4210 | 1001MB | 549.95 | 649.95 |
| APS Q 2210[5] Quantum Capella VP32210 | 2100MB | 699.95 | 799.95 |
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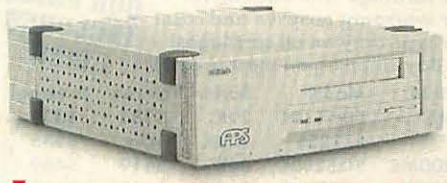
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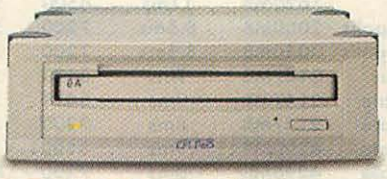



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| 2150MB | 8.5ms | 5400 | 512K | 5yr | VP32210 | $695 | $755 |
| 2150MB | 8.6ms | 7200 | 512K | 5yr | XP32151 | $825 | $885 |
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|---|---|---|---|---|---|---|
| 88MB | 20ms | 44, 88MB | SQ5110C | 32K | $285 | $339 |
| 135MB | 13.5ms | 135MB | EZ135S | 128K | n/a | $235 |
| 200MB | 18ms | 44,88,200MB | SQ5200C | 64K | $419 | $469 |
| 270MB | 13.5ms | 105, 270MB | SQ3270S | 128K | $409 | $439 |

| Brand | Capacity | Seek | RPM | Buffer | Wty | Model | Internal | External | |
|---|---|---|---|---|---|---|---|---|---|
| Seagate | 1050MB | 9ms | 5411 | 512K | 5yr | ST31230N | $409 | $469 | |
| Conner | 1080MB | 9ms | 5400 | 256K | 5yr | CFP1080S | $379 | $439 | |
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| Micropolis | 2050MB | 8.5ms | 7200 | 512K | 5yr | MC4221 | $789 | $849 | |
| Micropolis | 2050MB | 8.5ms | 7200 | 512K | 5yr | MC4221AV | $849 | $909 | |
| Conner | 2147MB | 9ms | 5400 | 512K | 5yr | CFP2105S | $689 | $749 | |
| Seagate | 2147MB | 9ms | 5411 | 512K | 5yr | ST32430N | $779 | $839 | |
| Seagate | 2147MB | 8ms | 7200 | 512K | 5yr | ST32550N | $889 | $949 | |
| Seagate | 4290MB | 9ms | 5400 | 512K | 5yr | ST15230N | $995 | $1055 | |
| Seagate | 4290MB | 8ms | 7200 | 1024K | 5yr | ST15150N | $1319 | $1379 | |
| Micropolis | 4294MB | 8ms | 7200 | 512K | 5yr | MC3243 | $1059 | $1119 | |
| Micropolis | 4294MB | 8ms | 7200 | 512K | 5yr | MC3243AV | $1139 | $1199 | |
| Conner | 4294MB | 9.5ms | 7200 | 512K | 5yr | CFP4207S | $1049 | $1109 | |
| Micropolis | 9100MB | 12ms | 5400 | 512K | 5yr | MC1991 | $1999 | $2099 | |
| Micropolis | 9100MB | 12ms | 5400 | 512K | 5yr | MC1991AV | $2109 | $2209 | |
| Seagate | 9090MB | 11ms | 5400 | 1024K | 5yr | ST410800N | $2179 | $2279 | |
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| Micropolis | 2050MB | 8.5ms | 7200 | 512K | 5yr | MC4221W | $879 | $979 | |
| Micropolis | 2050MB | 8.5ms | 7200 | 512K | 5yr | MC4221WAV | $939 | $1039 | |
| Quantum | 2140MB | 8ms | 7200 | 512K | 5yr | XP32151W | $899 | $999 | |
| Seagate | 2147MB | 8ms | 7200 | 512K | 5yr | ST32550W | $989 | $1089 | |
| Fujitsu | 2176MB | 9.5ms | 7200 | 512K | 5yr | M2915W | $729 | $829 | |
| Quantum | 2210MB | 8.5ms | 5400 | 512K | 5yr | VP32210W | $779 | $879 | |
| Seagate | 4290MB | 8ms | 7200 | 1024K | 5yr | ST15150W | $1559 | $1659 | |
| Micropolis | 4294MB | 8ms | 7200 | 512K | 5yr | MC3243W | $1159 | $1259 | |
| Micropolis | 4294MB | 8ms | 7200 | 512K | 5yr | MC3243WAV | $1239 | $1339 | |
| Fujitsu | 4350MB | 8.9ms | 7200 | 512K | 5yr | M2934W | $1019 | $1119 | |
| Micropolis | 9100MB | 12ms | 5400 | 512K | 5yr | MC1991W | $2129 | $2279 | |

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|---|---|---|---|---|---|
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| 135MB | EZ135 | 13.5ms | 3200 | n/a | 229 |
| 200 MB | SQ5200 | 18 ms | 3200 | 405 | 450 |
| 270 MB | SQ3270 | 13.5ms | 3200 | 405 | 460 |

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| 105 MB | SQ310 | $34 | 270 MB | SQ327 | $59 |

## Digital Linear Tape Drives

Quantum DLT

| Model | Capacity | Trans.Rate | Media | Price(Ext) |
|---|---|---|---|---|
| DLT2000X | 30GB | 2.5MB/sec | DLT20X | 5295 |
| DLT4000 | 40GB | 3MB/sec | DLT40 | 6195 |

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| 4-10GB 60MB/min., 4mm media, 1 Year warranty | 1225 | 1285 |
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| | Transparency Adapter | 559 |
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| | Vista-S6 | 760 |
| | Powerlook | 3250 |

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## Hard Drives

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| | Capacity | Seek | RPM | Cache | Warranty | Int. | Ext. |
|---|---|---|---|---|---|---|---|
| | 340 MB | 11 ms | 4500 | 128K | 2 Year | $119 | $179 |
| Perfomance! | 535 MB | 9.5 ms | 5400 | 512K | 5 Year | 195 | 270 |
| | 540 MB | 10 ms | 4500 | 128K | 3 Year | 170 | 230 |
| Best Value! | 730 MB | 11 ms | 4500 | 128K | 2 Year | 189 | 249 |
| | 850 MB | 11 ms | 4500 | 128K | 3 Year | 235 | 295 |
| | 1080 MB | 10 ms | 5400 | 128K | 3 Year | 280 | 340 |
| Atlas | 2.1 GB | 8 ms | 7200 | 1024K | 5 Year | 875 | 935 |
| Capella | 2.2 GB | 8 ms | 5400 | 1024K | 5 Year | 675 | 735 |
| Grand Prix | 4200 MB | 8.6 ms | 7200 | 512K | 5 Year | 995 | 1055 |
| Atlas | 4.3 GB | 8 ms | 7200 | 1024K | 5 Year | 1355 | 1415 |
| Powerbook | 256 MB 2.5"17MS | | 4500 | 128K | 1 Year | 195 | 255 |
| Powerbook | 341 MB 2.5"17MS | | 4500 | 128K | 1 Year | 245 | 305 |

New! IBM IBM IBM IBM

| | Capacity | Seek | RPM | Cache | Warranty | Int. | Ext. |
|---|---|---|---|---|---|---|---|
| DeskStar | 540 MB 3.5" | 10 ms | 5400 | 128K | 5 Year | 185 | 245 |
| DeskStar | 1080 MB 3.5" | 8.9 ms | 5400 | 512K | 5 Year | 295 | 355 |
| UltraStar | 2.2 GB 3.5" | 8 ms | 7200 | 1024K | 5 Year | 925 | 995 |
| UltraStar | 4.5GB 3.5" | 8 ms | 7200 | 1024K | 5 Year | 1355 | 1415 |

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|---|---|---|---|---|---|---|
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| | Capacity | Seek | RPM | Cache | Warranty | Int. | Ext. |
|---|---|---|---|---|---|---|---|
| M4221 | 2.1 GB | 8.5 ms | 7200 | 512K | 5 Year | 775 | 835 |
| M3243 | 4.3 GB | 8.5 ms | 7200 | 512K | 5 Year | 1025 | 1095 |
| M1991 | 9.0 GB | 11 ms | 5400 | 512K | 5 Year | 1965 | 2065 |
| M4221AV | 2.1 GB | 8.5 ms | 7200 | 512K | 5 Year | 835 | 895 |
| M3243AV | 4.3 GB | 8.5 ms | 7200 | 512K | 5 Year | 1125 | 1185 |
| M1991AV | 9.0 GB | 11 ms | 5400 | 512K | 5 Year | 2095 | 2195 |
| M4221WAV | 2.1 GB | 8.5 ms | 7200 | 512K | 5 Year | 1075 | 1135 |
| M3243WAV | 4.3 GB | 8.5 ms | 7200 | 512K | 5 Year | 1465 | 1535 |
| M1991WAV | 9.0 GB | 11 ms | 5400 | 512K | 5 Year | 2295 | 2395 |

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Seagate Seagate Seagate Seagate

| | Capacity | Seek | RPM | Cache | Warranty | Int. | Ext. |
|---|---|---|---|---|---|---|---|
| Hawk 2 | 1.2 GB ST31230N | 9.5ms | 5400 | 512K | 5 Year | $395 | $455 |
| Barracuda2 | 2.4 GB ST32550N | 8ms | 7200 | 1024K | 5 Year | 865 | 925 |
| Barracuda4 | 4.2 GB ST15150N | 8ms | 7200 | 1024K | 5 Year | 1299 | 1359 |
| Barracuda 2 Fast & Wide | 2.4 GB ST32550W | 8ms | 7200 | 1024K | 5 Year | 955 | 1040 |
| Barracuda 4 Fast & Wide | 4.2 GB ST15150W | 8ms | 7200 | 1024K | 5 Year | 1399 | 1484 |
| Elite 9 | 9.0 GB ST410800N | 11ms | 5400 | 1024K | 5 Year | 2195 | 2295 |

FUJITSU FUJITSU FUJITSU FUJITSU FUJITSU

| | Capacity | Seek | RPM | Cache | Warranty | Int. | Ext. |
|---|---|---|---|---|---|---|---|
| M1603 | 540 MB | 9 ms | 5400 | 512K | 3 Year | 180 | 240 |
| M1606 | 1.2 GB | 9 ms | 5400 | 512K | 3 Year | 315 | 365 |
| M2915 | 2.1 GB | 8.5 ms | 7200 | 512K | 5 Year | 885 | 945 |

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| TOSHIBA | 3601 Quad Speed | $325 |
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| NEC | 6Xe | $595 |
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| Plextor | 6Plex | $649 |
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| 1.3GB | Sony (4 MB Buffer) | 17ms | $1935 |
| 26GB | Sony Jukebox | 17ms | $6295 |
| HEWLETT PACKARD 1.3GB | HP1716T | 23.5ms | 2050 |
| MaxOptics 1.3GB | Tahiti II | 18ms | 1995 |

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|---|---|---|
| Hayes | ACCURA14.4 ext | 125 |
| | OPTIMA28.8 ext | 425 |
| Practical Peripherals | PM14400HCIIV32 ext | 110 |
| | PM288HCIIV34 ext | 220 |
| US Robotics | Sportster 14.4 ext | 130 |
| | Sportster 28.8 ext | 260 |
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| | 288FaxModem ext | 225 |

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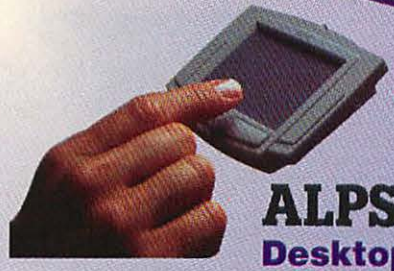
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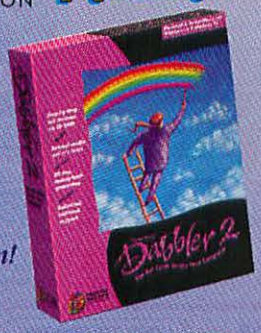
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| PageMaker V6.0 3.5" + CD | 546.32 |
| PageMaker V6.0 5 user pack 3.5" + CD | 2276.41 |
| PageMaker V6.0 upgrade | 144.99 |
| Persuasion V3.0.2 | 241.58 |
| Photoshop V3.0.4+ | 545.78 |
| Premiere V4.0 | 485.28 |
| Streamline V3.0 | 123.45 |
| Type Basics | 119.72 |
| Type Manager V3.8 | 38.72 |
| Apple System 7.5 upgrade | 96.40 |
| Ares Font Hopper | 39.01 |
| Ares Fontmonger V1.5 | 89.50 |
| Avery MacLabel Pro | 45.30 |

### Broderbund

| | |
|---|---|
| Alien Tales | 35.01 |
| Carmen Sandiego/World DLX | 39.72 |
| Carmen Sandiego/World DLX CD-ROM | 44.41 |
| MYST CD-ROM | 48.34 |
| The Amazing Writing Machine | 36.38 |
| The Printshop Deluxe V1.1 | 47.58 |
| Typestyler V2.0 | 122.12 |

### Caere

| | |
|---|---|
| Caere OmniPage Direct V2.0 | 58.11 |
| Caere OmniPage V5.0 | 297.12 |
| Caere OmniScan | 295.79 |

### Casady & Greene

| | |
|---|---|
| Conflict Catcher 3 | 59.01 |
| Conflict Catcher 3 comp upgrade | 31.52 |
| Conflict Catcher 3 vers upgrade | 31.58 |



New! PageMaker V6.0 Adobe
**Version upgrade**
**$144.99** 57782

### Claris

| | |
|---|---|
| ClarisDraw V1.0 | 245.64 |
| ClarisOrganizer V1.0v2 | 46.34 |
| ClarisWorks V4.0 | 118.22 |
| ClarisWorks V4.0 CPU bundle | 64.60 |
| ClarisWorks V4.0 vers/comp upgrade | 65.51 |
| Emailer | 56.56 |
| FileMaker Pro V2.1 | 89.69 |
| Impact V1.0 | 136.40 |

### Connectix

| | |
|---|---|
| RAM Doubler V1.5 | 53.98 |
| Speed Doubler | 55.38 |

### Corel

| | |
|---|---|
| Corel Gallery 1 | 32.17 |
| Corel Gallery 2 | 64.62 |
| CA Cricket Graph III V1.53 | 85.24 |

### Dantz

| | |
|---|---|
| Diskfit Direct V1.0 | 29.42 |
| Retrospect V2.1 | 134.94 |

### Delrina

| | |
|---|---|
| DelrinaFax PRO V1.5.1 | 52.45 |
| Fax PRO V1.5.1 CPU bundle | 24.01 |
| Dataviz MacLink+/PC Connection | 115.36 |
| Datawatch Virex V5.5 | 59.47 |
| DCA Crosstalk | 112.48 |
| Delta Point DeltaGraph Pro V3.0 | 125.03 |
| Deneba Canvas Power Graphics bundle | 279.98 |
| Deneba Canvas V3.5 + CD | 253.98 |

### Entertainment

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|---|---|
| A.D.A.M. Nine Month Miracle CD | 32.42 |
| A.D.A.M. The Inside Story CD | 32.45 |
| Berkeley After Dark V3.0 | 26.81 |
| Berkeley Disney Screen Saver | 27.62 |
| Berkeley Star Trek Screen Saver | 28.03 |
| Bungie Marathon | 24.01 |
| Bungie Marathon CD | 37.07 |
| Electronic Arts PGA Tour Golf II CD | 39.90 |
| Maxis SimAnt | 18.01 |
| Maxis SimCity 2000 | 38.72 |
| Maxis SimCity Classic | 23.67 |
| Paramount Jump Raven CD | 25.09 |
| Sierra Hoyle Classic | 27.62 |
| ST:TNG Interactive Tech Manual CD | 37.88 |
| Velocity Dev Spectre VR | 33.74 |
| Virgin 7th Guest CD | 42.17 |

### Fractal Design

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|---|---|
| Dabbler V1.0 | 39.91 |
| Painter V3.1 | 299.98 |
| Poser V1.0 | 89.98 |
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| Sketcher V1.0 | 48.10 |
| Farallon Timbuktu Pro V1.0 | 126.96 |
| Framemaker V4.0 | 559.82 |
| FWB Hard Disk Toolkit Personal V1.7 | 49.40 |

### Insignia

| | |
|---|---|
| Soft PC V3.0 | 99.24 |
| SoftPC PRO V3.1 | 194.79 |
| SoftWindows V2.0 | 269.23 |
| Inline INITpicker V3.0 | 43.76 |
| Intuit Quicken V5.0 | 41.48 |
| Kent Marsh Folderbolt V1.02 | 69.99 |



New! Connectix Speed Doubler V1.0
**$55.38** 57300

### MacPlay

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|---|---|
| Alone in the Dark | 34.61 |
| Battlechess | 18.13 |
| Caesars Palace | 19.63 |
| Frankenstein CD | 46.94 |
| Mac 4 Pak CD | 24.73 |
| Mac Gift Pack | 36.49 |
| Mario Teaches Typing CD | 28.61 |
| Mario's Game Gallery | 24.97 |
| Peter Gabriel XPLORA 1 CD | 46.08 |
| Wolfenstein 3D | 36.76 |

### MetaTools (HSC)

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|---|---|
| KPT Bryce V1.0 | 113.76 |
| KPT Convolver V1.0 | 113.76 |
| KPT Vector Effects V1.0 | 115.09 |
| Live Picture V2.0 | 636.14 |
| Power Photos | 91.16 |
| Power Photos II | 116.82 |

### Microsoft

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|---|---|
| Arcade V1.0 | 25.57 |
| Bookshelf | 49.99 |
| Cinemania 1995 CD | 49.10 |
| Encarta 1994 CD | 85.26 |
| Excel V5.0 | 269.96 |
| Excel V5.0 upgrade | 112.22 |
| Flight Simulator V4.0 | 39.11 |
| FoxPro V2.6 | 89.97 |
| Office V4.2.1 | 438.68 |
| Office V4.2.1 vers upgrade | 259.34 |
| PowerPoint V4.0 | 269.96 |
| PowerPoint V4.0 upgrade | 112.66 |
| Project V4.0 | 417.52 |
| Project V4.0 upgrade | 132.83 |
| Word V6.0.1 | 269.52 |
| Word V6.0.1 vers upgrade | 113.76 |
| Works V4.0 | 84.82 |

### Macromedia

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|---|---|
| Director V4.0 | 749.09 |
| Fontographer V4.1 | 308.25 |
| Freehand V5.0 | 359.59 |
| Freehand V5.0 comp upgrade | 148.98 |
| Freehand V5.0 vers upgrade | 148.98 |
| Graphic Design Studio bundle | 626.00 |
| MacroModel V1.5 | 174.48 |
| SoundEdit 16 V1.0 | 252.42 |

### Novell

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|---|---|
| WordPerfect V3.5 | 119.00 |
| WordPerfect V3.5, CD | 119.00 |
| WordPerfect V3.5, vers upgrade | 79.00 |
| WordPerfect V3.5, vers upgrade, CD | 79.00 |

### NOW Software

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|---|---|
| Now Contact V3.0 | 59.79 |
| Now Contact/Up to Date V3.5 bundle | 86.96 |
| Now Up to Date V3.5 | 59.58 |
| Now Utilities V5.0 | 76.44 |

### PRO CD

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|---|---|
| Direct Phone | 69.87 |
| Home Phone | 33.01 |
| Select Phone 1996 WIN/MAC CD | 36.06 |

### Personal Training Systems

| | |
|---|---|
| Official Guide to Netscape Navigator | 25.74 |
| Official Guide to Netscape Navigator CD | 25.69 |

### Quark

| | |
|---|---|
| QuarkXPress PMac V3.3.1 CD | 648.24 |
| QuarkXPress V3.3 | 569.50 |

### Strata

| | |
|---|---|
| Instant Replay V1.0 | 89.98 |
| Media Paint V1.0 | 406.37 |
| Vision 3D V4.0 | 399.04 |
| Vision 3D V4.0 comp upgrade | 143.89 |



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### Symantec

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|---|---|
| ACT! V2.0 | 155.02 |
| MacTools Pro V4.0 | 89.98 |
| Norton Utilities V3.1 | 93.44 |
| SAM AntiVirus V4.0 | 64.93 |
| Suitcase V2.1 | 59.60 |

### Virtual Reality

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|---|---|
| Virtual Reality Vistapro V3.0 | 49.93 |
| Virtual Reality Vistapro V3.0 CD | 59.83 |

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| XE15 15" flat square | 548.78 |
| XE17 17" flat square | 998.26 |
| XE21 21" flat square | 1769.26 |
| XP15 15" flat square | 595.73 |
| XP17 17" flat square | 1045.13 |
| XP21 21" flat square | 2169.43 |

### MAGNAVOX

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|---|---|
| CM2080 14" .29mm | 249.31 |
| CM4015 15" .28mm | 375.84 |
| CM4018 17" .28mm | 674.57 |
| 20CM64 20" .31mm | 1093.03 |

### SONY

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|---|---|
| CPD-1425 14" Trinitron | 288.39 |
| 15sf 15" Trinitron | 478.65 |
| 17sf 17" Trinitron | 659.14 |
| 20se1 20" Trinitron | 1929.20 |
| Multiscan TC 20" Trinitron | 3158.63 |

### Radius

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|---|---|
| PrecisionView 17 17" | 787.78 |
| PrecisionColor Display/17 17" full pg | 968.81 |
| SuperMatch 17 XL 17" | 779.59 |
| SuperMatch 21T XL 21" | 2149.63 |
| MultiView 21 21" | 1759.78 |
| IntelliColor Display 20e 20" | 1673.70 |
| PressView 17 SR 17" | 1699.81 |
| PressView 21SR 21" | 3193.75 |

## Graphics/Video Boards

### ATI

| | |
|---|---|
| Xclaim GA 2MB PCI | 349.91 |
| Xclaim GA 4MB PCI | 458.17 |
| Xclaim GA 2MB VRAM upgrade | 237.97 |

### Radius

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|---|---|
| Thunder 30/1600 | 1147.55 |
| Thunder 30/1152 | 759.00 |
| ThunderColor 30/1600 | 1697.64 |
| ThunderColor 30/1152 | 1499.00 |
| PrecisionColor 8/1600 | 458.97 |
| Thunder/24 GT | 1327.87 |
| Thunder IV GX 1152 | 1897.45 |
| Thunder IV GX 1360 | 2284.81 |
| Thunder IV GX 1600 | 2699.76 |
| PhotoEngine | 846.86 |
| VideoVision Studio V2.0 | 3699.00 |

## CPU Upgrades

### DayStar

| | |
|---|---|
| PowerPro 601 80MHz | 1435.51 |
| Turbo 601 66MHz | 838.56 |
| Turbo 601 100MHz | 1198.56 |
| PowerCard 601 | 634.80 |

### Newer Technology

| | |
|---|---|
| PowerClip clock accelerator | 114.95 |
| Power MacCache 256KB | 174.86 |
| PowerClip+Power MacCache bundle | 267.44 |

## Networking

### Dayna

| | |
|---|---|
| Etherprint-T APL Bridge RJ45/AUI | 318.50 |
| Etherprint-3 APL Bridge BNC/RJ45/AUI | 355.40 |

### FARALLON

| | |
|---|---|
| EtherWave AAUI Transceiver 10BT | 96.98 |
| EtherWave AUI Transceiver 10BT | 98.60 |
| EtherWave LC-F Adapt. w/FPU 10BT | 174.36 |
| EtherWave Printer Adapt. 10BT | 254.52 |
| Ether10-T transceiver RJ45/AAUI | 39.48 |
| PhoneNET Connector DIN-8 | 29.22 |

## Communications/Modems

### FASTMAC™

| | |
|---|---|
| FastMac™ 28.8 V.34 | 137.98 |

### Global Village

**PowerPort fax/modems**

| | |
|---|---|
| Gold 14.4K | 187.87 |
| Mercury 19.2K/PowerBook 5XX | 319.89 |
| Platinum V.34 | 325.96 |

**Teleport fax/modems**

| | |
|---|---|
| TelePort Gold II 14.4K | 104.71 |
| TelePort Platinum V.34 | 194.73 |

### Megahertz

| | |
|---|---|
| 14.4K CruiseCard with XJACK | 198.78 |
| 28.8K CruiseCard with XJACK | 298.69 |

### Motorola

| | |
|---|---|
| Lifestyle 28.8 external | 199.99 |
| Power 28.8 external | 254.78 |

### Practical Peripherals

| | |
|---|---|
| 14.4 external mini-tower w/fax | 93.48 |
| 28.8 V.34 external mini-tower w/fax | 179.35 |
| MacClass PCMCIA 14.4 | 177.14 |
| MacClass PCMCIA 28.8 | 329.64 |

### Supra

| | |
|---|---|
| Express 14.4 Plus | 97.29 |
| Express 288 | 171.74 |
| 288 V.34 | 209.80 |
| 144PB PowerBook | 156.93 |

### US Robotics

| | |
|---|---|
| Mac&Fax Sportster 14.4 | 112.00 |
| Mac&Fax Sportster V.34 | 199.89 |

## Storage Systems

### CD-ROM Drives

| | |
|---|---|
| NEC MultiSpin 6XE | 547.55 |
| NEC MultiSpin 2V Mac kit | 157.96 |
| Sony quad-speed external | 312.72 |

### iomega

| | |
|---|---|
| Zip drive 100MB SCSI external | 199.00 |
| 100MB Zip disk | 19.95 |
| 100MB Zip disks, 3 pack | 49.95 |
| 100MB Zip disks, 10 pack | 149.95 |
| Bernoulli Transportable 230MB | 454.44 |
| Bernoulli Insider 230MB | 419.78 |

### Fujitsu

| | |
|---|---|
| DynaMO 230MB 3.5" mag-optical | 568.75 |

### MiTAC

| | |
|---|---|
| 200MB external SyQuest drive | 499.86 |
| 270MB external SyQuest drive | 488.22 |

### SyQuest

| | |
|---|---|
| EZ135 external SCSI | 239.49 |

### Magnetic Media

| | |
|---|---|
| 88MB SyQuest cartridge, 5yr | 49.79 |
| 105MB SyQuest cartridge, 5yr | 59.20 |
| 200MB SyQuest cartridge, 5yr | 76.14 |
| 270MB SyQuest cartridge, 5yr | 83.57 |
| 90MB Iomega Bernoulli cartridge 5PK | 433.06 |
| 150MB Iomega Bernoulli cartridge | 92.60 |
| 230MB Iomega Bernoulli cartridge | 99.81 |
| 3M 230MB 3.5" optical, Mac format | 43.31 |

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## Input Devices

### ALPS

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|---|---|
| GlidePoint | 57.14 |
| Desktop GlidePoint | 71.88 |
| GlidePoint Keypad | 107.84 |
| GlidePoint Keyboard | 114.97 |

### ADESSO

| | |
|---|---|
| PowerMouse | 22.87 |
| Soft Touch Plus extended keyboard | 54.67 |
| Tru-Form extended keyboard | 89.77 |
| Tru-Form extended keyboard w/pointer | 99.98 |

### Connectix

| | |
|---|---|
| QuickCam digital video camera | 93.95 |

### EPSON

| | |
|---|---|
| ES-1000C color flatbed scanner | 737.77 |
| ES-1200C color flatbed scanner | 954.67 |
| ES-1200C ProMAC color flatbed scanner | 1122.02 |

### Microtek

| | |
|---|---|
| ScanMaker II | 379.94 |
| ScanMaker IISP | 477.53 |
| ScanMaker IISPX | 639.38 |
| ScanMaker IIHR | 724.72 |

### Nikon

| | |
|---|---|
| Super CoolScan film scanner | 1979.79 |
| Coolscan film scanner | 1289.73 |

### Polaroid

| | |
|---|---|
| SprintScan film scanner | 1529.87 |

### UMAX

| | |
|---|---|
| Vista-S6 MACLE2 | 563.33 |
| Vista-S6 MACPRO2 | 658.64 |
| Vista-S8 MACLE2 | 664.58 |
| Vista-S8 MACPRO2 | 774.61 |
| PowerLook MACPRO2 | 1995.00 |

### WACOM

| | |
|---|---|
| ArtPad II 4"x5" w/Ultra Pen | 149.00 |
| ArtZ II 6"x8" w/Ultra Pen | 298.59 |
| ArtZ II 12"x12" w/Ultra Pen | 417.34 |

## Printers

### EPSON

| | |
|---|---|
| Stylus Color | 529.53 |
| Stylus Color II | 449.00 |
| Stylus Color Pro | 799.00 |

### Hewlett Packard

| | |
|---|---|
| DeskWriter 600 | 299.86 |
| DeskWriter 660C | 396.87 |
| DeskWriter 850C | 539.21 |
| LaserJet 5MP | 1044.45 |
| LaserJet 4M Plus | 1957.13 |
| LaserJet 4Si MX | 4234.22 |
| LaserJet 4MV | 2836.09 |
| DeskJet 1600CM | 1007.96 |

### Texas Instruments

| | |
|---|---|
| microLaser 600 | 855.71 |
| microLaser Pro 600 PS23 | 1197.66 |
| microLaser PowerPro 12ppm | 1593.91 |

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| Apple PowerBook 140 Notebook | 2 | 8 | | | | | 122 | 169 | | | | | | |
| Apple PowerBook 145 Notebook | 4 | 8 | | | | | 122 | 169 | | | | | | |
| Apple PowerBook 145B Notebook | 4 | 8 | | | | | 122 | | | | | | | |
| Apple PowerBook 150 Notebook | 4 | 40 | | | | | 176 | 353 | 353 | | 524 | 14 mg=624 | 20 mg=885 | 28 mg=1189 |
| Apple PowerBook 160, 165, 180 Notebook | 4 | 14 | | | | | 159 | 239 | 299 | 389 | | | | |
| Apple PowerBook 165c, 180c Notebook | 4 | 14 | | | | | 159 | 239 | 299 | 389 | | | | |
| Apple PowerBook 170 Notebook | 4 | 8 | | | | | | 229 | | | | | | |
| Apple PowerBook 520, 520c, 540, 540c Notebook | 4 | 36 | | | | | 169 | | 319 | | | 619 | 1199 | |
| Apple PowerBook DUO 210, 230, 250 Notebook | 4 | 24 | | | | | 179 | | 339 | | 499 | | | |
| Apple PowerBook DUO 270c Notebook | 4 | 32 | | | | | 179 | | 339 | | 499 | | 20 mg=789 | |
| Apple PowerBook DUO 280, 280c Notebook | 4 | 40 | | | | | 179 | | 339 | | 499 | | | |
| Apple Macintosh TV | 5 | 8 | | | | | 149 | | | | | | | |
| Apple Macintosh IIfx | 4 | 128 | | | | | 165 | | | | | 729 | | |
| Apple Macintosh IIsi | 2/3/5 | 17 | | | | | 136 | | 328 | | | 556 | | |
| Apple Macintosh IIvx & IIvi | 4 | 68 | 512k | 59 | | | 136 | | 328 | | | 556 | | 2076 |
| Apple Macintosh Classic | | | | | | 153 | | | | | | | | |
| Apple Macintosh Color Classic | 4 | 10 | 256k | 34 | | 68 | 164 | | 278 | | | | | |
| Apple Macintosh Classic II, LC, LCII | 2/4 | 10 | 512k | 59 | | 68 | 164 | | 278 | | | | | |
| Apple Macintosh LCIII, LC475, LC550, LC575 | 4 | 36 | 256k | 34 | | | 139 | | | | | 529 | 1099 | |
| Apple Macintosh LC520 | 5 | 36 | | | | | 139 | | | | | 529 | 1099 | |
| Apple Macintosh LC630 | 4 | 36 | | | | | 139 | | | | | 529 | 1099 | |
| Apple Macintosh IIcx | 1 | 128 | | | | | 136 | | 272 | | | 556 | 1112 | 2076 |
| Apple Macintosh II, IIx | 1 | 32 | | | | | 136 | | 272 | | | 556 | 1112 | |
| Apple Macintosh Plus, SE | 1 | 4 | | | | 68 | 136 | | | | | | | |
| Apple Macintosh SE30 | 1/2 | 32 | | | | | 136 | | 272 | | | 556 | 1112 | |
| Apple Performa 200 | 2 | 10 | | | | 68 | 136 | | 278 | | | | | |
| Apple Performa 400 | 4 | 10 | | | | 68 | 136 | | 278 | | | | | |
| Apple Performa 405, 410, 430 | 4 | 10 | | | | 68 | 136 | | 278 | | | | | |
| Apple Performa 450, 460, 466, 467, 475, 476 | 4 | 36 | 256k/512k | 34/68 | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Performa 550, 575, 577 | 5 | 36 | | | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Performa 600, 600CD | 4 | 68 | 512k | 59 | | | 136 | | 328 | | | 529 | | 2076 |
| Apple Performa 6110CD, 6112CD, 6115CD | 8/16 | 72 | | | | | | | 289 | | | 529 | 1099 | |
| Apple Performa 6117CD, 6118CD | 8/16 | 72 | | | | | | | 289 | | | 529 | 1099 | |
| Apple Performa 630 | 4 | 36 | | | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Centris 610 | 4 | 68 | 512k | 59 | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Centris 650 | 4 | 132 | 512k | 59 | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Centris 660AV | 4 | 68 | | | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Quadra 605 | 4 | 36 | 512k | 59 | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Quadra 610 | 4 | 68 | | | | | 139 | | 289 | | | 529 | 1099 | |
| Apple Quadra 630 | 4 | 36 | | | | | 139 | | 289 | | | 529 | 1099 | |
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| Apple Quadra 700 | 4 | 68 | 512k | 59 | | | 136 | | | | | 556 | | 2076 |
| Apple Quadra 800 | 8 | 136 | 512k | 59 | | | | | 319 | | | 638 | 1078 | 2238 |
| Apple Quadra 840AV | 8 | 128 | 512k | 59 | | | | | 319 | | | 638 | 1078 | 2238 |
| Apple Quadra 900 | 4 | 256 | 512k | 59 | | | 136 | | | | | 556 | 1236 | 2076 |
| Apple Quadra 950 | 8 | 256 | 512k | 59 | | | 136 | | | | | 556 | 1236 | 2076 |
| Apple Workgroup Server 60 | 4 | 68 | | | | | | | 298 | | | 578 | 1058 | 2598 |
| Apple Workgroup Server 80 | 8 | 136 | | | | | | | 319 | | | 638 | 1078 | 2238 |
| Apple Workgroup Server 95 | 16/32/48 | 256 | | | | | 140 | | 280 | | | 556 | 1112 | 2076 |
| Apple Workgroup Server 6150 | 8 | 72 | | | | | | | 319 | | | 638 | 1078 | 2238 |
| Apple Workgroup Server 8150 | 16 | 264 | | | | | | | 319 | | | 638 | 1078 | 2238 |
| Apple Workgroup Server 9150 | 16/24 | 264 | | | | | | | 319 | | | 1038 | 1078 | 2238 |
| Apple Power Macintosh 6100/60 | 8 | 72 | 512k | 59 | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 7100/66 | 8 | 136 | 512k | 59 | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 7200 Catalyst | 8 | 136 | 512k | 59 | 299 | | 139 | | 289 | | | 529 | 1099 | 2076 |
| Apple Power Macintosh 7500/100 Tat | 8 | 136 | 512k | 59 | 299 | | 139 | | 289 | | | 529 | 1099 | 2076 |
| Apple Power Macintosh 8100/80 | 8 | 264 | 512k | 59 | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 6100/66 & 6100/66AV | 8/16 | 72 | | | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 7100/66AV | 16 | 136 | | | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 7100/80, 7100/80AV | 8/16 | 136 | | | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 8100/100, 8100/100AV | 8/16 | 264 | | | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 8100/110 | 8/16 | 264 | 512k | 59 | | | | | 278 | | | 578 | 1058 | 2198 |
| Apple Power Macintosh 8500/120 (Nitro) | 8/16 | 264 | | | | | | | 309 | | | | 1159 | |
| Apple Power Macintosh 9500/120, 9500/132 (Tsunami) | 8/16 | 264 | | | | | | | 309 | | | 595 | 1120 | 2295 |
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| Apple LaserWriter IIg | 5/8 | 32 | | | | 136 | | | | | | 556 | 1236 | |
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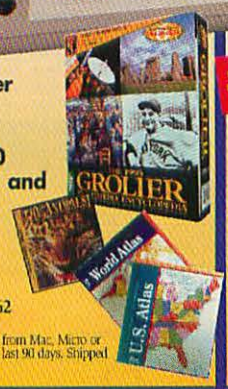
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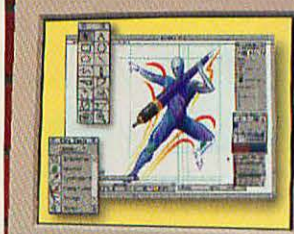
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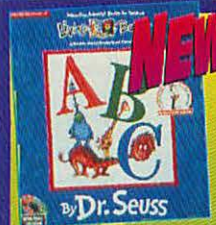
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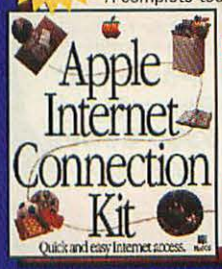
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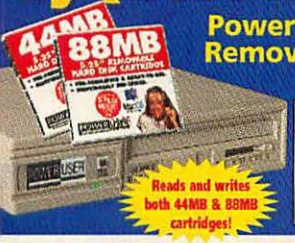
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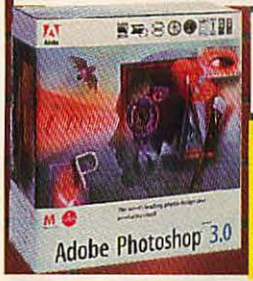
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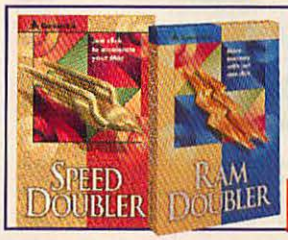
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| CPU/XKey/Mouse | Monitor/Card | Cash | Lease | |
|---|---|---|---|---|
| 9500/132/80/4.3GB/CD | Sony 20" /4MB VRAM | $9999 | $219 | |
| 8500/120/16/2.0GB/CD | Sony 17" /2MB VRAM | $5299 | $119 | SALE |
| 7500/100 40/1.0GB/CD | Sony 17" /2MB VRAM | $4799 | $109 | SALE |
| 7200/75 8/500/CD | Apple 15" | $2199 | $49 | |
| 8100/110/72/2.0GB/CD | Sony 17" /Thunder 24 | $6699 | $149 | |
| 8100/80 8/500/CD | PrecisionView 17" | $3399 | $75 | SALE |
| 7100/80 40/700/CD | Sony 20" /Thunder 24 | $5629 | $129 | |
| Q800 8/250 | Sony 15" /Thunder 24 | $1999 | $44 | SALE |

### MONTHLY SPECIALS

Complete System! 8100/80 $3399!

- PowerMac 8100/80 CPU
- 8MB RAM
- 500MB hard drive
- Radius PrecisionView 17" Trinitron monitor

While they last! rad is

**FREE!** Apple CD-300 Dual Speed CD ROM with every system lease. A $199 Value!

Purchase $400 or more and get the full Microsoft Office 3.0 or the bundled version of Adobe Photoshop 3.0.1 at incredible savings! $299 $149

### SCANNERS

DSC 6000C $449!

- 24-bit color
- 600x1200 dpi 4800 dpi interpolated
- Built in Gamma Correction

| Scanner | Description | Price | |
|---|---|---|---|
| DSC 6000c | 600 dpi flatbed w/PS LE | $449 | SALE |
| DSC 12000c w/Trans | 1200 dpi flatbed w/PS | $1299 | |
| ScanMaker IIspx | 600 dpi flatbed | $649 | |
| Umax PowerLook Pro | 1200 dpi flatbed | $2299 | SALE |
| Epson ES-1200c Pro | 1200 dpi flatbed | $1239 | |
| Epson ES-1000c Pro | 600 dpi flatbed | $769 | |
| ScanMaker 35t | 1800 dpi slide | $899 | |

### PRINTERS

TI MicroLaser Pro 600 PS23 $1189!

- 600 dpi camera ready output
- 8.5" x 11" print size
- 500 sheet capacity

| Model | Resolution | Size | Price | |
|---|---|---|---|---|
| TI MicroLaser Pro 600 PS23 | 600x600 | 8.5"x14" | $1189 | SALE |
| TI MicroLaser Pro E | 600x600 | 8.5"x14" | $1365 | |
| TI MicroLaser PowerPro | 600x600 | 8.5"x14" | $1589 | |
| Primera Pro Color | 300x600 | 8.5"x11" | $1499 | |
| Primera Pictura 310 Color | 300x300 | 12"x18" | $3899 | SALE |
| GCC XL 608 | 600x600 | 11"x17" | $2189 | |
| GCC XL 808 | 800x800 | 11"x17" | $2719 | |
| GCC XL 1208 | 1200x1200 | 11"x17" | $3899 | SALE |

### MONITORS

Radius PrecisionView 17 $879!

- Sony Trinitron Tube
- 17" diagonal screen
- 1024 x 768 resolution
- Flat, anti-glare screen

rad is

| Monitor | Resolution | Price | |
|---|---|---|---|
| Apple 14 | 14in, .28mm, 640x480 | $249 | SALE |
| Sony 15SF | 15in, .25mm, 1024x768 | $439 | |
| Sony 17SF | 17in, .25mm, 1024x768 | $859 | SALE |
| Sony 20SE | 20in, .25mm, 1280x1024 | $1889 | |
| Samsung 15NE | 15in, .28mm, 1024x768 | $369 | |
| NEC 17XV | 17in, .28mm, 1024x768 | $719 | |
| PrecisionView 17 | 17in, .25mm, 1024x768 | $879 | SALE |
| PressView 21SR | 21in, .25mm, 1600x1200 | $2989 | |

### GRAPHICS TABLETS

Wacom 12"x12" $419!

- 1016 lpi resolution
- Pressure-sensitive stylus with no cord or batteries!

| Model | Size | Price | |
|---|---|---|---|
| Wacom ArtZ | 6" x 8" | $289 | |
| Wacom SD-420E | 12" x 12" | $419 | SALE |
| Wacom SD-310E | 12" x 18" | $689 | |
| Wacom UD-1825 | 18" x 25" | $1999 | |

### FAX MODEMS

US Robotics Sportster 28.8 $195!

- 28,800 bps
- 100% AT&T compatible

| Model | Description | Price | |
|---|---|---|---|
| US Robotics Sportster 28.8 V.34 | External, 28.8K bps | $195 | SALE |
| SupraFAXModem 28.8 MC V.34 | External, 28.8K bps | $219 | |
| GlobalVillage TelePort Platinum | External, 28.8K bps | $225 | |

### VIDEO CARDS

Radius Thunder 24 $799!

- 24-bit color at 1152 x 870 dpi!
- Photoshop acceleration

rad is

| Video Cards | Resolution | Price | |
|---|---|---|---|
| Radius Thunder 24 | 1152x870 | $799 | SALE |
| Radius Thunder II Series IV GX 1152 | 1152x870 | $1809 | |
| Radius Thunder II Series IV GX 1600 | 1600x1200 | $2239 | |
| Radius Thunder II 30/1152 (PCI) | 1152x870 | $749 | SALE |
| Radius ThunderColor 30/1152 (PCI) | 1152x870 | $1489 | SALE |
| Radius ThunderColor 30/1600 (PCI) | 1600x1200 | $1889 | |

## SyQuest Cartridges

DSC 128MB Optical Cartridges $14!

LOW Prices

| Cartridges | | Price |
|---|---|---|
| 270MB Cartridges | (5 + or with drive purchase) | $56 |
| **200MB Cartridges** | **(5 + or with drive purchase)** | **$70** SALE |
| EZ 135MB Cartridges | (5 + or with drive purchase) | $21 |
| 105MB Cartridges | (5 + or with drive purchase) | $48 |
| **88MB Cartridges** | **(5 + or with drive purchase)** | **$45** SALE |
| 44MB Cartridges | (5 + or with drive purchase) | $39 |

## Optical Cartridges

| 3.5" Optical | Price | |
|---|---|---|
| Sony 128MB | $29 | |
| **DSC 128MB** | **$14** | SALE |
| Komag 128MB | $24 | |
| DSC 230MB | $24 | |
| Komag 230MB | $28 | |
| Sony 230MB | $39 | |

| 5.25" Optical | Price | |
|---|---|---|
| Sony 600/650MB | $69 | |
| DSC 600/650MB | $59 | |
| Komag 600/650MB | $69 | |
| Tahiti II 1GB | $159 | |
| Komag 1.0GB | $81 | |
| DSC 1.2/1.3GB | $79 | |
| Maxoptix 1.2/1.3GB | $83 | |
| **Sony 1.2/1.3GB** | **$85** | SALE |

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FREE! Sony Video Tape with any 10 Sony Cartridges

### Tapes

| Cartridges | Price | |
|---|---|---|
| Sony DAT 90m | $12 | |
| **Sony DAT 120m** | **$24** | SALE |
| Maxell 8mm 112m | $21 | |
| Sony 6250 | $25 | |
| Sony 6525 | $29 | |

## SyQuest 200MB $345!

- High speed—15ms access time!
- 5.25" format
- Compatible with SyQuest 44, 88 and 200MB cartridges

Meets the requirements of image processing professionals

72 Hour Internet Solution

## SyQuest Drives

dsc Turbo-charged SyQuest Drives!

| Model | Internal | External | dsc Turbo | |
|---|---|---|---|---|
| **SyQuest 270** | **$345** | **$385** | **$410** | SALE |
| **SyQuest 200** | **$345** | **$385** | **$410** | SALE |
| SyQuest 105 | $105 | $145 | $170 | |
| SyQuest 88C | $250 | $290 | $315 | |
| SyQuest EZ 135 | N/A | $189 | $215 | |

*Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo model includes FWB Hard Disk ToolKit and 72-hour warranty repair.*

## Optical Drives

- High 2.0MB p/s transfer rate
- Economical storage of large color images and digital audio/video data

SONY 1.3GB $1499!

| 5.25" Drives | Capacity | Seek | MacKit | dsc Turbo | |
|---|---|---|---|---|---|
| Sony 650 | 650MB | 19ms | $999 | $1049 | SALE |
| Ricoh 650EX | 650MB | 25ms | $799 | $849 | |
| MaxOptix-Tahiti III | 1.3GB | 25ms | $1989 | $2039 | |
| **Sony 1.3GB** | **1.3GB** | **25ms** | **$1499** | **$1549** | SALE |

FREE! Global Village Teleport Bronze with every optical drive!

Olympus 128MB Optical $299!

$129 Value!

| 3.5" Drives | Capacity | Seek | MacKit | dsc Turbo | |
|---|---|---|---|---|---|
| **Olympus 128** | **128MB** | **35ms** | **$299** | **$349** | SALE |
| Panasonic 128 | 128MB | 35ms | $319 | $369 | |
| Fujitsu-230 | 230MB | 30ms | $569 | $594 | |

*Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo model includes FWB Hard Disk ToolKit and 72-hour warranty repair.*

## Multifunctional Drives

Archive 525 Tape Drive /540MB HD Combo $499!

- Up to 6 devices in the same enclosure!
- Costs less than individual drives
- Quick setup. Only one cable!
- Promotes data security. Just lock it away after hours.

Optical SyQuest

| Multifunctional | Price | |
|---|---|---|
| **SyQuest 200 /540MB hard drive** | **$669** | SALE |
| Sony SDT 5000 /2.0GB Quantum | $1699 | |
| Sony 650MB Optical /SyQuest 200 | $1099 | |
| **SyQuest 88c /650MB optical drive** | **$999** | SALE |
| SyQuest 88c /NEC 3X CD ROM /540MB HD | $679 | |
| **Archive 525 Tape drive /540MB hard drive** | **$499** | 2 Left! |
| NEC 3X CD-ROM /1.3GB optical drive | $1599 | |

*Includes external drive, 25/50 SCSI Cable, terminator, Mac SW and 72-hour warranty repair.*

## CD ROM Recorders

Pinnacle Micro CDR-1000 $1499!

- 2x recording speed
- Economical archiving

| Model | Price | |
|---|---|---|
| PinnacleMicro CDR-1000 | $1499 | SALE |
| Yamaha 4-Speed CD-ROM Recorder | $2979 | |

## Tape Drives

Sony SDT-5000 $995!

- Built in data compression
- 16GB per 120 meter tape
- Low cost, dependable backup

Turbo models include 72 hour warranty repair or replacement!

| Model | Capacity | Size | MacKit | dsc Turbo | |
|---|---|---|---|---|---|
| **Sony SDT-5000** | **5-16GB** | **3.5"HH** | **$995** | **$1095** | SALE |
| Exabyte 8200 | 2GB | 5.25"FH | $1199 | $1299 | |

*Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo model includes Retrospect and 72-hour warranty repair/replacement.*

## Memory

4MB SIMMs $145!

| SIMMs | Price | | DIMMs | Price | |
|---|---|---|---|---|---|
| **4MB** | **$145** | SALE | 8MB | $335 | |
| 8MB | $285 | | **16MB** | **$585** | SALE |
| 16MB | $565 | | 32MB | $1135 | |
| 32MB | $1135 | | 64MB | $2295 | |

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**Support PM9500, PM8500, PM7500 and PM7200**

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## Hard Drives

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**dsc Turbo Drives**

Now even faster! Turbo models have guaranteed 72-hour replacement *plus* FWB Hard Disk Toolkit—**FREE!**

Turbo Quantum 1.0GB $374!

## Quantum

Quantum Warranty: 2 to 5 Years

| | Access | Internal | External | dsc Turbo | |
|---|---|---|---|---|---|
| 256MB Go | 17ms | $184 | $304 | $329 | |
| 341MB Go | 17ms | $289 | $409 | $434 | |
| **512MB Go** | **17ms** | **$339** | **$459** | **$484** | SALE |
| 365MB | 11ms | $95 | $155 | $180 | |
| 420MB | 14ms | $170 | $230 | $255 | |
| 540MB | 14ms | $180 | $240 | $265 | |
| 730MB | 11ms | $205 | $265 | $290 | |
| 850MB | 14ms | $235 | $295 | $320 | |
| **1.0GB** | **9.5ms** | **$289** | **$349** | **$374** | SALE |
| 2.1GB | 8.5ms | $685 | $745 | $770 | |
| **4.2GB** | **8.5ms** | **$1035** | **$1095** | **$1120** | SALE |

LOW Prices

- 9ms access time!
- 3.25" half height format
- 5 year warranty

Seagate 4.3GB Hawk $1089!

## Seagate

Seagate Warranty: 5 Years

| Model | Access | Internal | External | dsc Turbo | |
|---|---|---|---|---|---|
| 1.0GB Hawk 1 | 9ms | $429 | $489 | $539 | |
| 2.1GB Hawk 2LP | 9ms | $789 | $849 | $874 | |
| **2.1GB Barracuda 2LP** | **8ms** | **$949** | **$1009** | **$1059** | SALE |
| 2.1GB Barracuda 2W* | 8ms | $1029 | $1089 | $1139 | |
| **4.3GB Hawk 4LP** | **9ms** | **$1089** | **$1149** | **$1199** | SALE |
| 4.3GB Barracuda 4LP | 8ms | $1459 | $1519 | $1569 | |
| 4.3GB Barracuda 4W* | 8ms | $1539 | $1599 | $1649 | |
| **3.4GB Elite 3** | **10ms** | **$839** | **$899** | **$949** | 1 Left! |
| 9.1GB Elite 9 | 11ms | $2189 | $2289 | $2339 | |

***For Active Termination, add $29. Additional 50/50 SCSI cables, $15 each.***

*Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo models include FWB Hard Disk ToolKit, active terminator and 72-hour warranty repair.*

** Fast/Wide drives require ATTO SE IV SCSI interface card at $895*

## Disk Arrays

dsc 4.0GB Array $1899!

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- Supports Raid Levels 0 and 1 for disk mirroring and striping
- Speeds up all applications—including VideoVision Studio!

| Model | Description | Array | VideoVision | |
|---|---|---|---|---|
| dsc 2.0GB Array | (2 x 1.0GB drives) | $1089 | N/A | |
| **dsc 4.0GB Array** | **(2 x 2.0GB drives)** | **$1899** | **$2599*** | SALE |
| **dsc 8.0GB Array** | **(2 x 4.0GB drives)** | **$2699** | **$3499*** | SALE |
| dsc CD-ROM Array | (6 x Quadspeed) | $1299 | N/A | |

*Includes external drive array, SCSI Cable, MAC SW and terminator.*
**VideoVision Studio support requires ATTO Fast/Wide interface; add $895*

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**RADIUS17"** MultiRes Trinitron Color Monitor.....$785
**EXTERNAL** ***28.8 FAX/MODEM***.....$159

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**APPLE** StyleWriter 1200.....$269
**NEW! APPLE** Portable Color StyleWriter 2200.....$399
**NEW! APPLE** LaserWriter 4/600 PS.....$895
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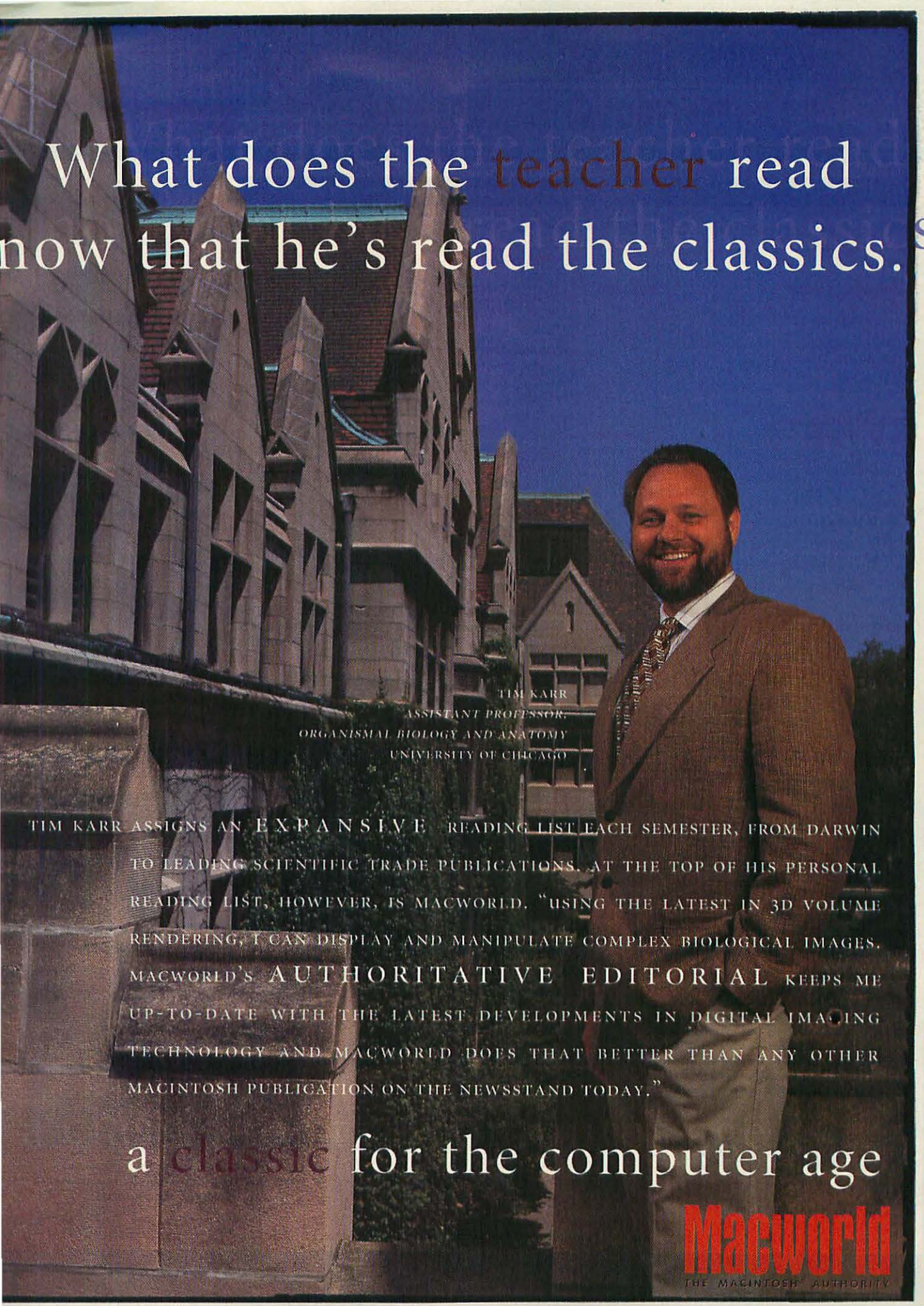


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# BUSINESS TOOLS

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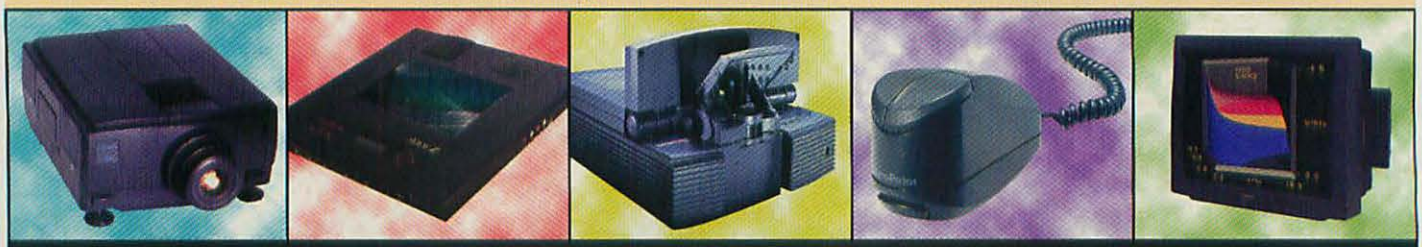
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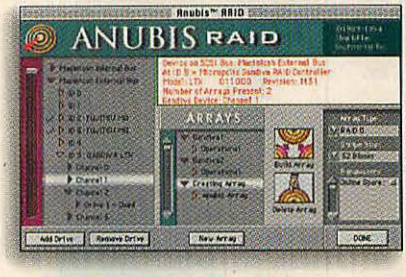



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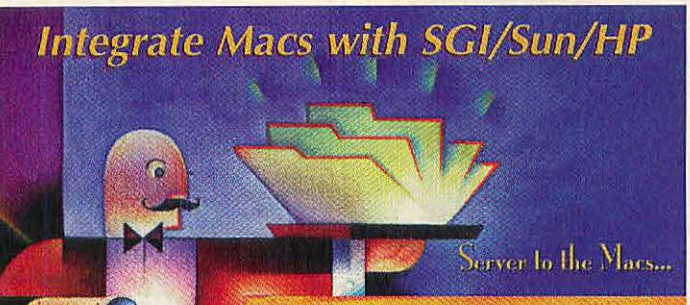
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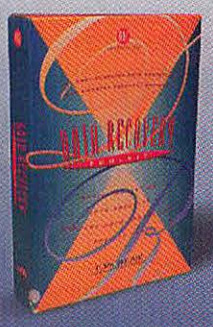
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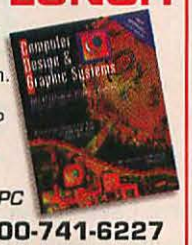
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| 6220CD | VI / TV | 2325 |
| 6218CD | 16/1GB | 2669 |
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| DeskJet | 850 | 539 |
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| LaserJet | 5MP | 979 |
| LaserJet | 4M+ | 1839 |
| LaserJet | 4MV | 2689 |
| ScanJet | 3C | 889 |

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|---|---|---|
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| 15 sf | 15" | 449 |
| 17 sf | 17" | 829 |
| 17 se | 17" | 1019 |
| 20 se | 20" | 1889 |

### MicroTek / UMax

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|---|---|---|
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| Scanmaker | IIG | 239 |
| Scanmaker | IIHR LE | 709 |
| Scanmaker | III | 2339 |
| Vista-T630 | Mac LE2 | 399 |
| Vista-S6 | Mac LE2 | 539 |
| Vista-S8 | Mac LE2 | 643 |
| UC1260 | Mac LE2 | 699 |

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|---|---|
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| Art Pad | 6x8 ADB | 299 |
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### NEC Monitors

| | | |
|---|---|---|
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| 8100/110 16/2000 CD | 3,653. |
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| 540C 4/320 | 3,095. |
| 540C 12/500 Mdm | 4,095. |
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| 5300cs/10 16/750 | 3,289. |
| 5300c/100 8/500 | 3,478. |
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| 14" Multiple Scan | 332. |
| 15" Multiple Scan | 445. |
| 17" Multiple Scan | 935. |
| Apple Vsion 1710AV | 1,009. |
| 20" Multiple Scan | 1,878. |

### Printers

| | |
|---|---|
| SW 1200 NEW !! | 244. |
| Color SW2400 | 425. |
| Personal LW320 | 760. |
| Personal LW 360 | 1,195. |

### Printers

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|---|---|
| LW Pro 16/600 | 1,999. |
| LW 4/600 PS | 845. |
| Color LW 12/600 PS | 6,107. |

### SyQuest External Drives

| | |
|---|---|
| 88MB for Mac | 339. |
| 200MB for Mac | 479. |
| 270MB for Mac | 458. |
| 44MB / 88MB Cart | 40. / 45. |
| 105MB / 270MB Cart | 50. / 55. |
| 200MB Cart | 66. |

### Quantum Hard Drives

**Internal**

| | |
|---|---|
| 365MB SCSI | 153. |
| **730MB SCSI** | **235.** |
| 1080MB SCSI | 523. |
| 2.1GB SCSI | 864. |

**External**

| | |
|---|---|
| 365MB SCSI | 233. |
| **730MB SCSI** | **295.** |
| 1080MB SCSI | 603. |
| 2.1GB SCSI | 944. |

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### Pinnacle Micro

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|---|---|
| Tahoe 230-Mac | 713. |
| Sierra 1.3GB-Mac | 2,175. |
| Sierra 2.6GB-Mac | 4,353. |
| RCD1000-Mac | 1,513. |

### Global Village

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|---|---|
| Teleport Bronze II | 90. |
| Teleport Gold II | 119. |
| Teleport Platinum | 229. |
| PowerPort Gold | 223. |
| PowerPort Mercury | 314. |

### Miscellaneous

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| Apple CD600E NEW! | 298. |

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|---|---|
| Soft Windows v1.0 | 149. |

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| Stylewriter 2200 Color | 369 |
| Laserwriter 4/600 | 839 |
| CD ROM 600 External | 299 |
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| Apple Monitor 15" | 399 |
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| ST12550N, 2GB, 8ms | $855 | MC4221, 2GB, 8.5ms | $895 |
| ST32550N, 2GB, 8ms | $895 | MC3243, 4GB, 9ms | $1275 |
| ST15150N, 4GB, 8ms | $1395 | MC3243AV, 4GB, 9ms | $1365 |
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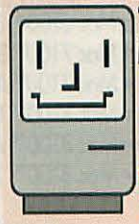
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| AWS 6150/66 16/700/CD/A.S | $2879 |
| AWS 6150/66 16/700/CD | $2279 |
| AWS 8150/110 16/1GB/CD/A.S | $4479 |
| AWS 9150/120 16/2GB/CD | $5479 |

## SPECIALS

| | |
|---|---|
| Mac LC 550 4/160 w/Trin | $669 |
| Quadra 630 4MB | $799 |
| Performa 630 8/250/CD ref | $889 |
| Performa 631CD 8/500 | $1498 |
| PB 520c 4/160 | $1799 |
| LW Select 360 W/TONER | $1099 |
| LaserWriter Pro 16/600 | $1549 |
| LaserWriter 4/600 | $799 |
| Apple 15" MultiScan | $449 |

## PowerBooks

| | |
|---|---|
| PB 5300c 8/500 | $3595 |
| PB 5300C 16/750 | $4298 |
| PB 5300C 32/1GB | $6195 |
| PB 5300cs 8/500 | $2795 |
| PB 5300cs 16/750 | $3498 |
| PB 190cs 8/500 | $2099 |
| PB 190 4/500 | $1679 |
| PB 2300c 8/750 | $3398 |
| PB 2300C 20/1GB | $4098 |
| PB 520c 12/320/Modem | $2598 |
| PB 520 4/160 | $1695 |
| Duo Dock II+ 1MB V-RAM, ETHER. | $879 |

## MODEMS

| | |
|---|---|
| Global Village P.P. Mercury | $329 |
| Global Village P.P PC Cards | CALL |
| Global Village Teleport Gold II | $129 |
| Global Village Teleport Plat. | $255 |

## Monitors

| | |
|---|---|
| Apple 14" M Scan | $389 |
| Apple 15" M-Scan | $459 |
| Apple 17" M-Scan | $949 |
| Apple 17" M Scan AV | $1029 |
| Apple 20" M-Scan | $1869 |

## SONY

| | |
|---|---|
| SONY CPD-425 14" | $321 |
| SONY Multiscan 15sf | $438 |
| SONY 17sf | $869 |
| SONY 20se | $1885 |

## SuperMac/ Radius

| | |
|---|---|
| SuperMatch PressView 21T | $3099 |
| SuperMatch 21 T XL | $1999 |
| PrecisionView 17 | $899 |
| Precision Color/17" | $929 |
| IntelliColor 20e | $1859 |

## NEC

| | |
|---|---|
| NEC XP17 | $1029 |
| NEC XE21 | $1778 |

## VIDEO BOARDS

| | |
|---|---|
| VideoVision Studio 2.0 | $3629 |
| PrecisionColor 8/1600 | $499 |
| Thunder Color 30/1152 | $1199 |
| Thunder Color 30/1600 | $1999 |
| Thunder IV GX.1600 | $2698 |
| Thunder IV GX.1360 | $2208 |
| Thunder IV GX.1152 | $1825 |
| Thunder /24 GT | $1299 |
| PrecisionColor Pro 24XK | $679 |
| PrecisionColor Pro 24XP | $259 |

## Printers

| | |
|---|---|
| Personal LaserWriter 300 | $598 |
| LaserWriter Select 360(10PPM) | $1099 |
| LaserWriter 16/600 | $1649 |
| LaserWriter 4/600 PS | $829 |
| Color StyleWriter 2200 | $379 |
| Color StyleWriter 2400 | $399 |
| StyleWriter 1200 | $269 |
| Color LaserWriter 12/600 | $6095 |
| HP DeskWriter 660c | $499 |
| HP DeskWriter 660 | $299 |
| HP Laserjet 4M Plus | $1898 |
| HP Laserjet 4 MV | $2695 |
| HP Laserjet 5 MP | $1089 |

Limited In Stock

MacBase Offers :

## Quantum

| | INT | EXT |
|---|---|---|
| 730MB Lighting,11 MS,3.5" | $219 | $269 |
| 1.0GB FireBall,3.5" | $359 | $419 |
| 2.2GB GrandPrix, 3.5" | $779 | $849 |
| 4.2GB Atlas,8.6MB,3.5" | $1129 | $1209 |
| 340MB Daytona,17MS,2.5" | $219 | |
| 514MB Daytona,17MS,2.5" | $329 | |

## Seagate

| | INT | EXT |
|---|---|---|
| 2.5GB Barracuda 2LP | $1029 | $1098 |
| 4.3GB Barracuda 4 | $1489 | $1559 |
| 9.1GB Elite 9 | | $2569 |

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### Power Mac 72-PIN

| | |
|---|---|
| 4MB 60ns/70ns | Call/$139 |
| 8MB 60ns/70ns | Call/$275 |
| 16MB 60ns/70ns | $479/$459 |
| 32MB 60ns/70ns | $899/$889 |

### 9500 SERIES

| | |
|---|---|
| 8MB DIMM | $309 |
| 16MB DIMM | $539 |
| 32MB DIMM | $999 |
| 64MB DIMM | $2049 |

### MAC 30-PIN

| | |
|---|---|
| 1MB SIMM | $35 |
| 2MB SIMM | $79 |

MEMORY PRODUCTS ARE NEW W/ LIFETIME WARRANTY

| | |
|---|---|
| 4MB SIMM | $126 |
| 8MB SIMM | $295 |
| 16MB SIMM | Call |

### PB 500 SERIES

| | |
|---|---|
| 4MB UPGRADE | $169 |
| 8MB UPGRADE | $298 |
| 16MB UPGRADE | $579 |
| 32MB UPGRADE | $1139 |

### PB 100 SERIES

| | |
|---|---|
| 4/8/10MB (PB100) | $129/$229/$329 |
| 4/8/12/20/28/36 MB (PB150) | Call |

### VIDEO/CACHE

| | |
|---|---|
| 256K/512K/1MB | $16/$33/99 |
| 256K L2 CACHE | $269 |
| 512 K L2 CACHE | $395 |

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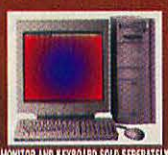
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*16/1GIG/CD $4149*



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| | | |
|---|---|---|
| 6100/66 | 8/500 | $1349 |
| 6100/66 | 8/500/CD | $1399 |
| 7100/80 | 8/500 | $1699 |
| 7500/100 | 16/500/CD | $2699 |
| 7500/100 | 16/1GIG/CD | $2799 |
| 8100/100 | 8/700 | $2379 |
| 8100/100 | 16/700/CD | $2779 |
| 8100/100 | 16/1GIG/4X CD | $2999 |
| 8100/100AV | 16/1GIG/4X CD | $2999 |
| 8100/110 | 16/2GIG/CD | $3199 |
| 8500/120 | 16/1GIG/CD | $3899 |
| 8500/120 | 16/2GIG/CD | $4299 |
| 8500/120 | 48/2GIG/CD | $5399 |
| 9500/120 | 16/1GIG/CD | $4299 |
| 9500/120 | 16/2GIG/CD | $4699 |
| 9500/132 | 16/2GIG/CD | $4899 |

## QUADRA

| | |
|---|---|
| 605 4/160 | $729 |
| 610 8/230 | $999* |
| 650 8/230 | $1899* |
| 800 8/500/CD | $1999* |
| 840AV 16/500/CD | $2199* |
| 950 8/0 OR 8/230 | $2099/2199 |
| 950 16/1GIG/CD | $3099 |
| CENTRIS 660AV 8/500/CD | $1099 |

# POWERBOOKS



**520C**
4/160 $1799
4/240 $1729*
12/320/FAX/MDM $2599

| | |
|---|---|
| 540C 4/320 | $CALL$ |
| 540 4/240 | $1949* |
| 520 4/240 | $1449* |
| NEW 190, 5300 | $CALL$ |
| 150,165,180,180C, | $CALL$ |

## POWERBOOK DUO

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|---|---|
| NEW DUO 2300 | $CALL$ |
| Duo 250 4/200 | $1399* |
| Duo 250 12/200/fax | $1799* |
| Duo Dock | $399* |
| Duo Dock II | $599* |

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|---|---|
| SUPERMATCH 17T 17" | $749 |
| PRECISION COLOR 17" | $699* |
| PRECISION COLOR 20" | $1099* |
| PRECISION COLOR 21" | $1299* |
| INTELLICOLOR 20E 20" | $1799 |
| SUPERMATCH 21" | $1699* |
| PRESSVIEW 21" | $2499* |
| 20" MONOCHROME | $499* |
| 21" MONOCHROME | $579* |

## MONITORS

| | |
|---|---|
| APPLE 14" AV | $299* |
| APPLE 14" MultiScan | $379 |
| APPLE 15" MultiScan | $429 |
| APPLE 17" MultiScan | $969 |
| APPLE Vision 1710AV | $1049 |
| APPLE 20" MultiScan | $1899 |
| NEC XP15 15" Color | $599 |
| NEC XV17 17" Color | $759 |
| NEC XP17 17" 1280X1024 | $1049 |
| NEC XP21 21" 1600X1200 | $2099 |
| SONY 1425 14" | $329 |
| SONY 15SF 15" | $479 |
| SONY 17SF 17" | $869 |
| SONY 20SE 20" | $1849 |

## APPLE PRINTERS

| | |
|---|---|
| Pro 810 Duplex, 20ppm, 11x17 | $2299 |
| Color LaserWriter 12/600 | $6299 |
| LW Select/Personal 300 | $339*/479 |
| LW Select 320 | $649 |
| Select 360 w/Toner | $1149 |
| LaserWriter 16/600/PS | $1649 |
| StyleWriter II | $199 |
| Color StyleWriter PRO | $479 |

## HP PRINTERS

| | |
|---|---|
| DeskWriter 660c | $429 |
| DeskWriter 320/SHEET | $369 |
| DeskJet 1200c (PS) | $1649 |
| LaserJet 5MP | $1049 |
| LaserJet 4M Plus | $1849 |
| LaserJet 4MV 11x17 | $2799 |
| PowerEnvelope Feed | $279 |

## HARD DRIVES

| | INT. | EXT. |
|---|---|---|
| APPLE ORIGINAL 700MB | $199 | $259 |
| QUANTUM 1GIG | $299 | $369 |
| QUANTUM 2.4GIG | $729 | $789 |
| BARRACUDA 2 - 4GIG | $969 | $1029 |
| CONNER 4 GIG | $999 | $1079 |
| ELITE-9 9 GIG | $1899 | $1969 |

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**575** 5/250/CD **$899***
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**$1249**
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8/350/CD
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**630** 4/250 w/FPU **$799**
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| | | |
|---|---|---|
| 640 | 12/500/CD w/Monitor | $2049 |
| 5215CD | 8/1GIG/CD w/Monitor | $2159 |
| 6115CD | 8/350/CD w/Monitor | $1499* |
| 6200CD | 8/1GIG/CD w/Monitor | $2059 |
| 6220CD | 16/1GIG/CD | $2299 |

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| **8500/120** | **16/1GB/CD** | **3839** |
| **8500/120** | **16/2GB/CD** | **4325** |
| **7500/100** | **16/500/CD** | **2525** |
| **7500/100** | **16/1GB/CD** | **2725** |
| **7200/75** | **8/500/CD** | **1550** |
| **7200/90** | **8/500/CD** | **1725** |
| 8100/100 | 8/700 | 2315 |
| **8100/100** | **16/700/CD** | **2650** |
| 8100/100AV | 16/1GB/CD | 2850 |
| **7100/80** | **8/700/CD** | **1725** |
| 7100/80AV | 16/700/CD | 1995 |
| 6100/66 | 8/500/CD | 1395 |
| **6100/66** | **16/500/DOS** | **2199** |

### POWERBOOKS

| | | |
|---|---|---|
| 190CS | 8/500 | $ CALL |
| 5300CS | 8/500 | CALL |
| 5300CS | 16/750 | CALL |
| 5300C | 8/500 | CALL |
| 5300C | 16/750 | CALL |
| 5300CE | 32/1GB | CALL |
| DUO2300 | 8/500 | CALL |
| **520** | **4/240** | **1595** |
| 520C | 4/240 | 1900 |
| **520C** | **12/320/FM** | **2725** |
| 540C | 4/320 | 2995 |
| 540C | 12/500/FM | 3795 |

### QUADRA / PERFORMA

| | | |
|---|---|---|
| Quadra 630 | 4/500 | $ 945 |
| Performa 631 | 8/500/CD | CALL |
| Performa 640 | 8/500/CD/DOS | 1845 |
| Performa 6116 | 8/700/CD | 1785 |
| Performa 5215 | 8/1GB/CD | CALL |
| Performa 6200 | 8/1GB/CD | 1995 |

### MONITORS

| | | |
|---|---|---|
| Apple | Multiscan 14" | $ 359 |
| **Apple** | **Multiscan 15"** | **379** |
| Apple | Multiscan 1710 | 1099 |
| Apple | Multiscan 20" | 1895 |
| Sony | CPD15SF1 15" | 499 |
| Sony | CPD17SF1 17" | 859 |
| **NEC** | **XV15 15"** | **469** |
| NEC | XV17 17" | 775 |
| MAG | DXF17 | 619 |
| SuperMatch | 21TXL | 2069 |
| **Radius** | **Intellicolor 20(e)** | **1739** |

### CD ROM

| | | |
|---|---|---|
| **Pinnacle** | **RCD1000** | **$ 1389** |
| (2x Recordable/includes TOAST and 2 CDs) | | |
| Kodak | PCD225 2x Record | 2065 |
| Kodak | PCD600 | 19849 |
| **Apple** | **600E Quad Speed** | **299** |

### HARD DRIVES

| | | |
|---|---|---|
| **Apple** | **700MB 3.5"** | **$ 199** |
| **Quantum** | **1GB Fireball 3.5"** | **310** |
| **Seagate** | **2GB Barracuda 3.5"** | **979** |
| **Quantum** | **4GB GranPrix 3.5"** | **959** |
| **Apple** | **700MB External** | **259** |
| **Quantum** | **1GB Fireball External** | **359** |
| **Seagate** | **2GB Barracuda Ext.** | **1029** |
| **Quantum** | **4GB GranPrix Ext.** | **1035** |
| Iomega | ZIP 100MB | 199 |
| ZIP | 100MB 10Pack | 149 |

### SCANNERS

| | | |
|---|---|---|
| **Visioneer** | **PaperPort** | **$ 339** |
| AGFA | StudioScan IIsi | 815 |
| **HP** | **Scanjet IIIC** | **915** |
| **UMAX** | **Vista-S6 / Phtshp.LEII** | **529** |
| UMAX | UC1260 / Phtshp.LEII | 689 |
| Microtek | ScanMaker III / Phtshp. | 2429 |
| Microtek | ScanMaker IISP | 439 |
| **Epson** | **1200C** | **909** |
| **Nikon** | **Coolscan** | **1295** |
| **Nikon** | **ScanTouch AX1200** | **1175** |

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### SOFTWARE

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| Adobe Premier 4.0 | | 499 |
| MacroMedia Director 4.0 | | 769 |
| **Pagemaker 6.0** | | **379** |
| Fractal Design Painter 3.1 | | 309 |
| SoftWindows 2.0 PwrMac | | 279 |
| Filemaker Pro 2.1 | | 89 |
| **Adobe Illustrator 5.5** | | **299** |
| QuarkExpress 3.3 (PowerMac/68kMac) | | 649/575 |
| **FormZ 2.7** SPECIAL | | **CALL** |
| **Electric Image Animation System** | | **CALL** |

### MODEMS

| | | |
|---|---|---|
| **Apple** | **GeoPort Telecom Kit** | **$ 128** |
| **Supra** | **ExpressModem288** | **189** |
| **Supra** | **FaxModem288** | **225** |
| GlobalVillage | Teleport Gold II 14.4 | 120 |
| **GlobalVillage** | **Teleport Platinum 28.8** | **225** |
| GlobalVillage | PowerPort Mercury 19.2 | 315 |

### PRINTERS

| | | |
|---|---|---|
| **Apple** | **LW 4/600PS** | **$ 795** |
| **Apple** | **LW Select 360** | **1095** |
| **Apple** | **LW 16/600PS** | **1895** |
| **Apple** | **LW 12/600PS** | **6125** |
| HP | DeskWriter 600C | 295 |
| HP | LaserJet 5MP | 1025 |
| HP | LaserJet 4MV (11x17) | 2715 |

### MISC.

| | | |
|---|---|---|
| Apple | Design Keyboard | $ 79 |
| MacAlly | Extended Keyboard | 69 |
| Connectix | QuickCam | 95 |
| **MouseSystems** | **Optical Mouse** | **49** |
| Wacom | ARTZ 6x8 | 310 |
| **Radius** | **Videovision Studio 2.0** | **3049** |

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| 7200/90 | 1495. | 2135. | 2435. | 3295. | 4465. | 6610. | 10600 | NA |
| 7500/100 | 2195. | 2685. | 3080. | 3845. | 4845. | 7175. | 11395. | 19550. |
| 8500/120 | 3350. | 3875. | 4195. | 4995. | 5995. | 8450. | 12420. | 20495. |
| 8500/132 | 3930. | 4495. | 4795. | 5595. | 6595. | 8795. | 12999. | 20995 |
| 9500/120 | 3395. | 4150. | 4495. | 5195. | 6220. | 8620. | 12795. | 20720. |
| 9500/132 | 3995. | 4540. | 4840. | 5525. | 6620. | 9020. | 13198. | 21420. |
| 6100/66 | 1220. | 1799. | 2065. | 3025. | 4030. | N/A | N/A | N/A |
| 7100/80 | 1595. | 2120. | 2495. | 3195. | 4295. | 6675. | N/A | N/A |
| 7100/80AV | 1699. | 2095. | 2375. | 3350. | 4450. | 6825. | N/A | N/A |
| 8100/100 | 2195. | 2740. | 3040. | 3875. | 4995. | 7395. | 11765. | N/A |
| 8100/100AV | 2295. | 2895. | 3175. | 4050. | 5145. | 7545. | 11975. | N/A |
| 8100/110 | 2295. | 2795. | 3090. | 3925. | 5045. | 7445. | 10875. | N/A |

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### PERFORMA

| | | |
|---|---|---|
| 6216CD | 8/1GB | 1680 |
| 6116CD | 8/700 | 1770 |
| 6200CD | 8/1GB | 1999 |
| 6220CD | 16/1GB/TV | 2195 |
| 5200CD | 8/800 | 1929 |
| 631/CD | 8/500 | 1475 |
| 630CD | 8/250 | 1299 |

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|---|---|---|
| 540C | 20/500M | 3950 |
| 540C | 12/320M | 3495 |
| 540C | 36/800M | 4995 |
| 520C | 8/500 | 2495 |
| 150 | 4/120 | 935 |
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|---|---|---|
| 6150/66 | 16/700.CD(W/4.1) | 2850 |
| 8150/110 | 16/1GB.CD.DAT(W/4.1) | 4795 |
| 8150/110 | World Wide Web | 4995 |
| 9150/120 | 16/2GB.CD | 5695 |

### APPLE MONITORS

| | |
|---|---|
| Apple 17" AV | 1030 |
| Apple 14" Multiscan | 350 |
| Apple 15" Multiscan | 395 |
| Apple 17" Multi scan | 910 |
| Apple 20" Multiscan | 1875 |

### HEWLETT PACKARDS

| | |
|---|---|
| HP 1200C/PS | 1555 |
| HP 5MP | 1030 |
| DeskWriter 660C/850C | 470/535 |
| HP 4M Plus | 1850 |
| HP4MV/4MP | 2695/1350 |
| HP Deskwriter 600 | 305 |
| ScanJet IIIC | 915 |

### APPLE PRINTERS

| | | |
|---|---|---|
| Color Style Writer 2400 | | 335 |
| LaserWriter 16/600 | | 1695 |
| Laser Select 360 | | 1095 |
| Color Laser | 12/1600 | 6195 |
| Laser 4/600 | | 799 |
| StyleWriter II | | 169 |

### DEMO MAC'S

| | | |
|---|---|---|
| 8500/120 | 0/0 | 2545 |
| 9500/120 | 0/0 | 2595 |
| 9500/132 | 16/2GB/CD | 4395 |
| 8100/110 | 16/2GB/CD | 3295 |
| Quadra 650 | 8/230 | 1695 |
| Quadra 610 | 8/230 | 850 |
| Centris 650 | 8/80 | 899 |
| Performa 466 | 4/160 | 470 |
| Performa 467 | 4/160 | 520 |
| Performa 577 | 5/230/CD | 850 |
| Performa 630 | 4/250 | 650 |

### DRIVES

| | |
|---|---|
| Yamaha Recordable CDw/Toast | 2795 |
| Zip Drive | 195 |
| Radius 4GB Pro Array | 4795 |
| Apple 700MB HD | 150 |
| Apple 500MB HD | 125 |
| Apple 500MB 2.5"f.PowerBook | 295 |
| Toshiba 800MB 2.5"HD | 650 |
| Apple 1GB HD | 395 |
| 4GB Grand Prix | 1025 |
| 2.4GB Seagate Hwck | 799 |

### PARTS

| | |
|---|---|
| 9500 Logic Board | 1095 |
| 132 Mhz. Procc. 9500/8500 | 895 |
| 120 Mhz. Procc. 9500/8500 | 495 |
| 8500/7500 Logic Board | CALL |
| 8100/110 Logic board | 1595 |
| 7100/80 Logic Board | 995 |
| Quad.800/840 L.Board | 995/1295 |
| Quad. 950/650 L.Board | 995 |
| Apple Mouse II | 55 |
| Super floppy | 199 |
| 14" Hi Res. Ref. | 275 |
| Apple CD 300e Plus | 189 |
| Generic Ext. Keyboard | 49 |
| Apple Std. Keyboard | 69 |
| Power Supply 8100/7100 | 275 |
| PowerBook 500 Battery | 120 |
| GEO Port. | 130 |
| System 7.5 on CD | 25 |
| External Case f/CD300i+ | 25 |

### Exchange your old MAC to NEW POWER MAC

| | | | |
|---|---|---|---|
| 610,660 | to | 7200/75 | 1050 |
| 650 | to | 7200/90 | 995 |
| 800, 840AV | to | 7500/100 | 1695 |
| 8100 | to | 8500/120 | 2495 |
| 950 | to | 9500/120 | 2095 |

### SPECIALS

| | | |
|---|---|---|
| Quarda 950 | 0/0 | 1695 |
| WGS 8150/110 | 16/1GB.CD.DAT | 4795 |
| Performa 575 | 8/250CD | 850 |
| Performa 636 | 5/250 | 650 |
| Kodak Photo CD 870w/Remote | | 175 |

### SCANNERS

| | |
|---|---|
| AGFA Studio Scan IIsi | 895 |
| AGFA Horizon | CALL |
| AGFA Arcus Plus II | 2495 |
| AGFA ProColor Premier | CALL |
| Umax Power Look | 2750 |
| PixleCraft (Xerox) 4000 | 2095 |
| PixleCraft (Xerox) 8000 | 9995 |
| ScanMaker III | 2550 |
| ScanMaker 2SP | 810 |
| UMax 1260 Pro | 1075 |
| Epson 1200C | 1250 |

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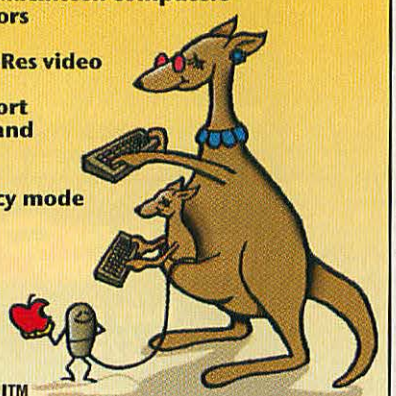
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| 7200/90 8/500/cd | 1799 |
| 7500/100 16/500/cd | 2549 |
| 7500/100 16/1gb/cd | 2749 |
| 8500/120 16/1gb/cd | 3795 |
| 8500/120 16/2gb/cd | Call |
| 9500/120 16/1gb/cd | Call |
| 9500/132 16/2gb/cd | 4895 |
| 6100/66 8/500/cd | Call |
| 7100/80 8/700/cd | Call |
| 8100/100 16/700/cd | Call |
| 8100/110 16/2gb/cd | Call |

### Performas

| | |
|---|---|
| 640CD 12/500/dos | Call |
| 6116CD/60 8/700 | 1739 |
| 5215CD/75 8/1gb | 2145 |
| 6200CD/75 8/1gb | Call |
| 6220CD 16/1GB/TV | 2335 |

All Performas come with monitor, keyboard, modem and bundled softwares/cds

### Workgroup Servers

| | |
|---|---|
| 6150 16/700/cd/AS | 2865 |
| 6150 16/700/cd/Inet | 2639 |
| 8150 16/1g/cd/DAT | 4935 |
| 8150 16/1g/cd/Inet | 4165 |
| 9150 16/2g/cd/dat | 6869 |
| 9150 16/2g/cd | 5855 |

### Apple Printers

| | |
|---|---|
| Stylewriter 1200 | 269 |
| Stlyewriter 2400 | 399 |
| Port. Stylewriter 2200 | 399 |
| Laser Select 320 | 719 |
| Laserwtr 4/600 PS | 865 |
| Laser Select 360 | Call |
| Laser 16/600 P/S | Call |
| Col. Laserwtr 12/600 | 6145 |
| Laser pro 810 | Call |

Call for current best prices & items not listed

### Powerbooks

| | |
|---|---|
| PB 5300cs/100 8/500 | Call |
| PB 5300c/100 16/750 | Call |
| PB 5300ce/117 32/1g | Call |
| PB Duo 2300C | Call |
| PB 520C 4/160 | Call |
| PB 540C 4/320 | Call |

### Apple Monitors

| | |
|---|---|
| Multiplescan 14" | Call |
| Apple 15" Color | 439 |
| Multiplescan 17" | 949 |
| AppleVision 1710AV | Call |
| Multiplescan 20" | 1899 |

### Hewlett Packard

| | |
|---|---|
| Deskwriter 320 | 295 |
| Deshwriter 600 | 299 |
| Deskwriter 560C | 379 |
| Deskwriter 660C | 419 |
| Laserjet 5MP | 1025 |
| Laserjet 4M Plus | 1869 |
| Deskjet 1200C PS | 1595 |
| Deskjet 1600CM | 1875 |
| Deshjet 850C | 545 |
| Laser 4MV 11x17 | 2699 |
| Laser 4SiMX | 4079 |
| Scanjet 3C | 919 |
| Scanjet 3P | 325 |
| Jet Direct card | 299 |
| Duplex option 4M+ | 495 |

### Radius

| | |
|---|---|
| Precisionview 17" | Call |
| Prec.Color 17" | 975 |
| Intellicolor 20E | 1889 |
| Pressview 21T | 2995 |
| Precisionview 21 | 2195 |
| Supermatch 21TXL | 2075 |
| Thundercolor 30/1600 | 1895 |
| Thundercolor 30/1152 | 1499 |
| Thunder 30/1600 | 1139 |
| Thunder IVgx 1152 | 1895 |
| Precesioncolor 8/1600 | 459 |
| Telecast Board | Call |

### N.E.C

| | |
|---|---|
| 3V / 3fge | 499/579 |
| XE15/XP15 15" | 575/675 |
| XE17/XP17 | 995/1245 |
| XE21/XP21" | 1995/2475 |
| XV15/XV17 | 445/749 |

### Epson

| | |
|---|---|
| ES-1200c /Scantastic | 945 |
| Es-1200c/Image-Edit | 1245 |
| Stylus Color printer | 525 |
| 720 dpi paper | 29 |

### Nikon

| | |
|---|---|
| Coolscan LS10E | 1299 |
| ScanTouch AX 1200 | 1169 |
| Coolprint | 1439 |
| Super Coolscan | Call |

### UMax

| | |
|---|---|
| Powerlook | 2795 |
| UC 1260 w/Photoshp | 1059 |
| Vista S-6 | 699 |
| Vista S-8 | 875 |
| Vista T630 | 545 |
| Gemini D16 | Call |
| Auto Doc. feeder | 464 |
| Transparency adap. | 435 |

### Agfa

| | |
|---|---|
| Studio scan II | 799 |
| Arcus II | 2599 |
| Studioscan IISi | 899 |

### Microtek

| | |
|---|---|
| SM IIsp/spx | 499/849 |
| SM IIhr/III | 799/2295 |
| SM 35t slide | 899 |

### Sony

| | |
|---|---|
| CPD 1425 | 315 |
| GDM-20SE | 1869 |
| CPD-15 SF | 465 |
| GVM-2020 21" | 1495 |
| CPD 17 SF 17" | 865 |

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| ThunderColor 30/1600 | $1,950 |
| ThunderColor 1152 | $1275 |

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|---|---|
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| Adobe Photoshop | $395 |
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| FWB 8.2GB Array | $3,995 |
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|---|---|
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| Radius Telecast Upgrade | $8,195 |
| Radius Telecast v.10 | $10,975 |
| Radius Video Vision v.2.0 | $2,975 |
| Media 100 | $7500 |
| Electric Image | Call |
| UVW-1800-SP | Call |
| PVW-2800-SP | Call |
| UVW-1600-SP | Call |
| UVW-1400-SP | Call |

## Memory

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|---|---|
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| 32MB Simms/Dimms | $895/1150 |
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| 8MB Simms/Dimms | $295/375 |

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|---|---|
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| PM 8100/100 • 16/2GB | $3,550 |
| PM 8100/100 • 16/4GB | $3,850 |
| PM 7100/80 • 8/500 | $1,675 |
| PM 7100/80 • 8/700/CD | $1,795 |
| PM 6100/66 • 8/500 | $1,350 |
| PM 6100/66 • 8/500/CD | $1,550 |
| PM 9500/132 • 16/2GB/CD | $4,895 |
| PM 9500/120 • 16/1GB/CD | $4,195 |
| PM 8500/120 • 16/1GB/CD | $3,895 |
| PM 8500/120 • 32/4GB/CD | $4,995 |
| PM 7500/100 • 16/500/CD | $2,595 |
| PM 7500/100 • 16/1GB/CD | $2,850 |
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| 7100/80 8/500 | $2599 |
| 7100/ 80AV | CALL |
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| 5300CS/100 | CALL |
| 5300C/100 | CALL |
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| PER. 5212CD | CALL |
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| LWRITER16/600PS | $1999 |
| HP 4ML | $799 |
| HP 5MP | $999 |
| HP 1200 C/PS | CALL |
| STYLEWRITER 2400 | $499 |

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|---|---|
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| PRECISION 17 | CALL |
| PC 24X | $675 |
| PC24XP | $299 |

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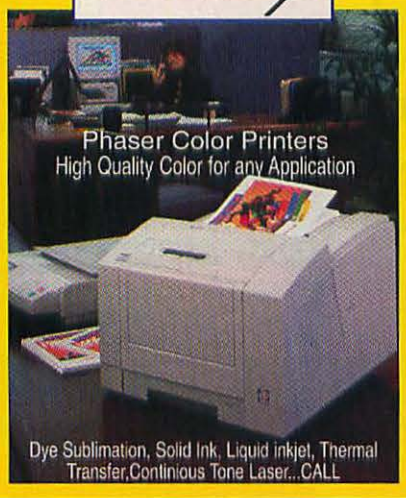
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| Mac LC III 4/80 | $469.00 | Apple One Scanner | $399.00 | PB Int. Fax/Data Mdm | $25.00 |
| Apple Portrait Display | $375.00 | system 7.5 (Disk or CD) | $19.00 | Toner/Select 300,310,360 | $69.00 |

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| Mac SE (FDHD) | 1/0 | $299.00 |
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| •Mac IIX | 4/80 | $425.00 |
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| Mac LC II | 4/160 | $399.00 |
| Mac LC III | 4/80 | $449.00 |
| Mac LC III | 4/120 | $479.00 |
| Mac IISI | 5/160 | $499.00 |
| Mac Portable | 2/40 | $350.00 |
| Pwr Mac 7100/80 | 8/500 | $1399.00 |
| Centris 610 | 4/230 | $575.00 |
| Centris 650 | 4/230 | $875.00 |
| Centris 660AV | 8/230/CD | $999.00 |
| Mac LC 520 | 5/80/CD | $699.00 |
| Performa 200 | 4/80 | $449.00 |
| Performa 400 | 4/80 | $375.00 |
| Performa 410 | 4/80 | $375.00 |
| *Performa 637 | 8/350/CD | $899.00 |
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| PB 145 | 4/80 | $799.00 |
| PB 145B | 4/80 | $799.00 |
| PB 160 | 4/80 | $949.00 |
| PB 165 | 4/160 | $1099.00 |
| PB 165C | 4/80 | $1299.00 |
| PB 180 | 4/120 | $1450.00 |
| Duo 210 | 4/80 | $699.00 |
| Duo 230 | 4/80 | $899.00 |
| Duo MiniDock | | $199.00 |
| Duo Dock | | $349.00 |
| Duo Floppy Adapter | | $59.00 |
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| PB Battery Recharger | | $35.00 |
| PB Int. Fax/Data Mdm | | $25.00 |
| PB 14.4 Express Mdm | | $79.00 |
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| Apple HDI-30 System Cable or SCSI Disk Adapter | | $25.00 |

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| *Apple 15" MultiScan | $339.00 |
| Apple 14" Color Display | $350.00 |
| Apple Portrait Display | $199.00 |
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| Apple 21" RGB Display | $1099.00 |

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|---|---|
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| LaserSelect 300 | $299.00 |
| Laser Select 360 | $899.00 |
| Stylewriter | $129.00 |
| Stylewriter II | $159.00 |
| Portable Stylewriter | $299.00 |
| ImageWriter II | $199.00 |
| I/W LocalTalk Card | $59.00 |
| Apple Color Printer | $299.00 |
| Laser Pro 600 | $899.00 |
| Laser 16/600 | $1399.00 |
| Apple OneScanner | $249.00 |
| Apple Color OneScanner | $499.00 |
| Mac IIci Cache Cards | $15.00 |
| Apple CD 150 Ext. Drive | $129.00 |
| Apple CD 300 Ext. Drive | $199.00 |
| Apple HDI-20 | $129.00 |
| Apple 5.25" Drive(LC/IIe) | $79.00 |
| *Apple Design Kbd | $69.00 |
| Apple Ext. II Kbd | $115.00 |
| Centris/Q660AV NuBus Adap. | $49.00 |
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| Classic II 4/80 | $549. |
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| Performa 636CD 8/250 | $899. |
| Performa 637 8/350/CD | $949. |
| Quadra 660AV 4/0 | $999. |
| Centris 650 4/0 | $999. |
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| RasterOps 208 NEW | $129. |
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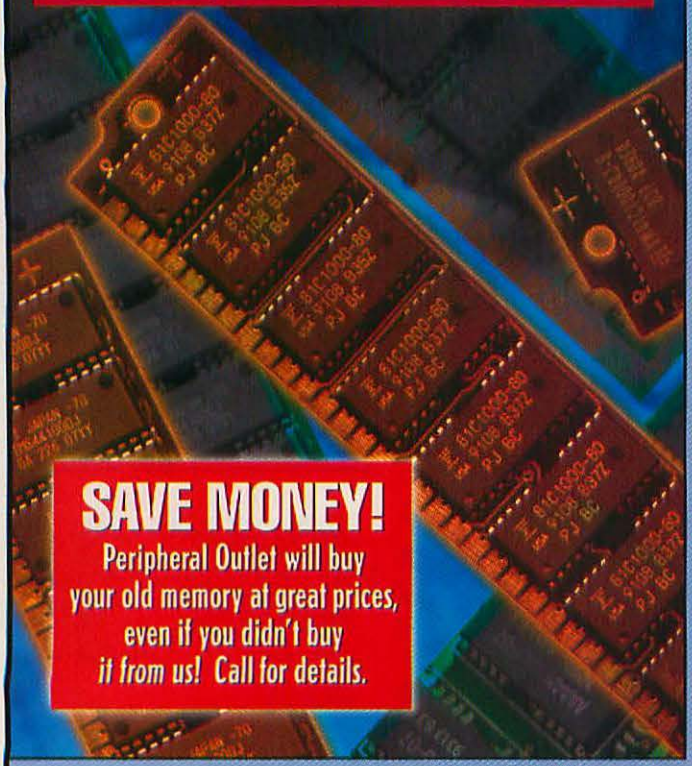
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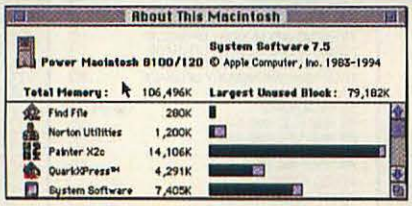
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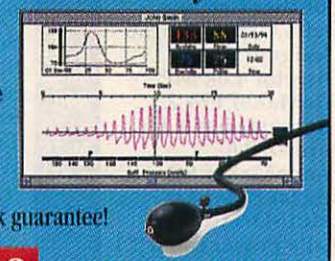



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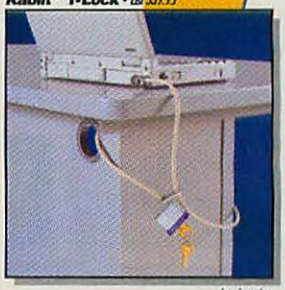
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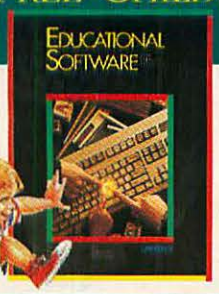
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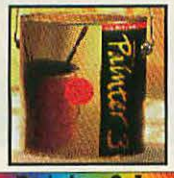
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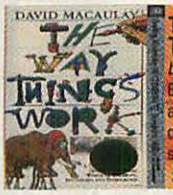

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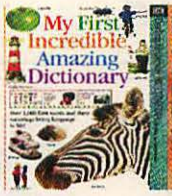
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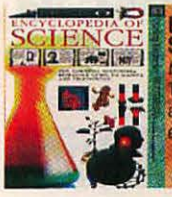
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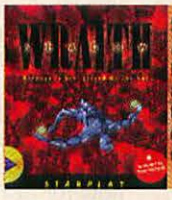
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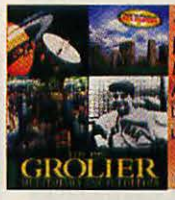
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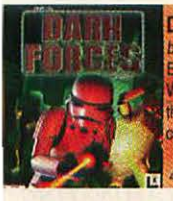
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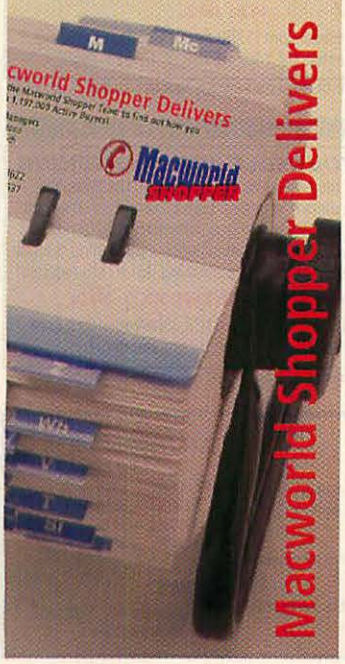
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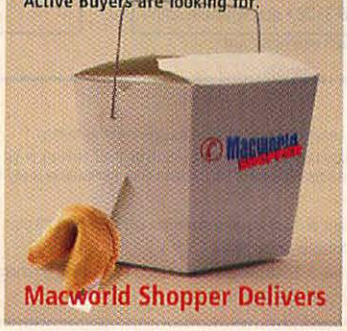
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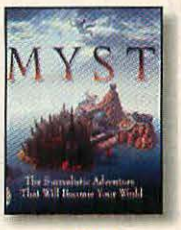
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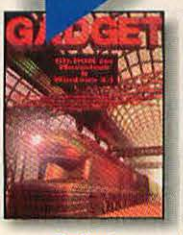
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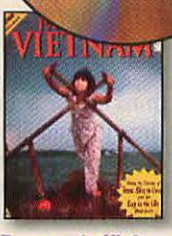

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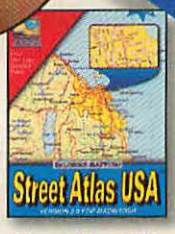

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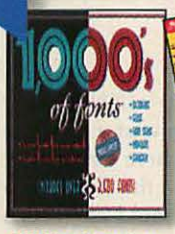

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BY MIKE GODWIN

# The Marty Method

*How the smart people were conned by the cyberporn "study"*

*TIME* SHOUTED "CYBERPORN" from every newsstand in the country. Yet three weeks later we learned that the *Time* July 3 cover story should have been billed "cyberfraud." We now know that the so-called Carnegie-Mellon study, which claimed that computer porn marketers were cultivating a public taste for extreme and degrading imagery, was largely cooked up in the mind of Marty Rimm, a 30-year-old undergraduate with questionable research skills. In fact, the now-notorious article in the June 1995 *Georgetown Law Journal* (*GLJ*) is so outrageously flawed that anyone with even a smattering of statistics knowledge can spot flaws on the first reading. So why did *Time*, the law journal, and a number of esteemed academics judge Rimm's "study" worthy of the hype? One simple reason: like all the best con men, Rimm was gifted at finding a mark's buttons and then pushing them.

## Tell 'em What They Want to Hear

Knowing that he'd need civil-libertarian allies when the study came out, Rimm and his faculty adviser, Marvin Sirbu, solicited my support back in November 1994, both stressing how the data could be used to attack the Supreme Court's community-standards approach to obscenity. When the *GLJ* article appeared, it barely addressed Rimm's "preliminary" finding about community standards, so I wondered why they each shared this with me. I now think it's because they'd read one of the articles I'd written about the prosecution of a Milpitas, California, couple charged with distributing obscenity in Memphis via a BBS. Rimm, whose "research" is based largely on a study of the couple's BBS, presumably hoped to give me the impression that his work would support my free-speech agenda.

Rimm's tactic when pitching his article as serious scholarship was to tell potential collaborators that his work complemented theirs. Just look at the previous work and stated philosophies of the three law professors—Anne Branscomb, Catharine MacKinnon, and Carlin Meyer—whose legal- and policy-oriented commentaries ran in the *GLJ* with Rimm's.

For Branscomb, who has written about marketers collecting personal data, Rimm's study must have seemed an homage: "Every time consumers log on," Rimm wrote, "their transactions assist pornographers in compiling databases of information about their buying habits and sexual tastes." Similarly, Rimm's discussion of how descriptions of "power-imbalance" imagery increase the frequency of downloads supports MacKinnon's theories about how porn promotes sexism and the victimization of women. Rimm emphasized that the Net can't be censored effectively, which suggested to Meyer, who opposes censorship, that our culture must come to terms with its own appetite for explicit sexual images.

And just in case his custom-tailored presentation didn't win the law professors' endorsements, Rimm asked them explicitly for at least one statement strongly praising his study.



ROB DUDLEY

## Tempting Time

Rimm now had the ammunition he needed to help Philip Elmer-DeWitt sell the study as a *Time* cover story. But how did Rimm manage to sell Elmer-DeWitt in the first place? HotWired's July 2 interview with Elmer-DeWitt offers some clues.

The *Time* writer relates his first encounter with Rimm, which occurred when Elmer-DeWitt was working on a piece about the November 1994 censorship flap at Carnegie-Mellon (itself triggered by Rimm and his "study").

"Rimm was hard to get a hold of the week that I was doing that story, so I had to interview a number of people, Marvin Sirbu and others, to find out what this study was in order to fully report what had happened. Finally, late in the week [Rimm] got back to me, and I went over how I had described the study, and he said, 'Geez, I can't believe you got that right!' He ended up being impressed by how I managed, he thought, accurately to characterize his study. A few months later, he E-mailed me and asked whether *Time* would be interested in getting first crack at it when the study was finally ready for publication. So from the beginning, Rimm was talking about giving us an exclusive look at this study."

This shows Rimm knew just which buttons to push on a journalist. Few compliments are more effective than praising accuracy or insight. In fact, a review of that first *Time* article reveals it to be profoundly inaccurate. For one thing, Rimm had not "put together a picture collection" totaling nearly a million images, as Elmer-DeWitt states. Rimm only claimed to have collected that many *descriptions* of images. For another, Rimm hadn't himself tracked 6.4 million downloads; instead, he simply claimed to have totaled the tracking data assembled by the sysops of adult-oriented computer BBSs. But Rimm's not one to quibble over inconvenient facts when pursuing a convenient alliance.

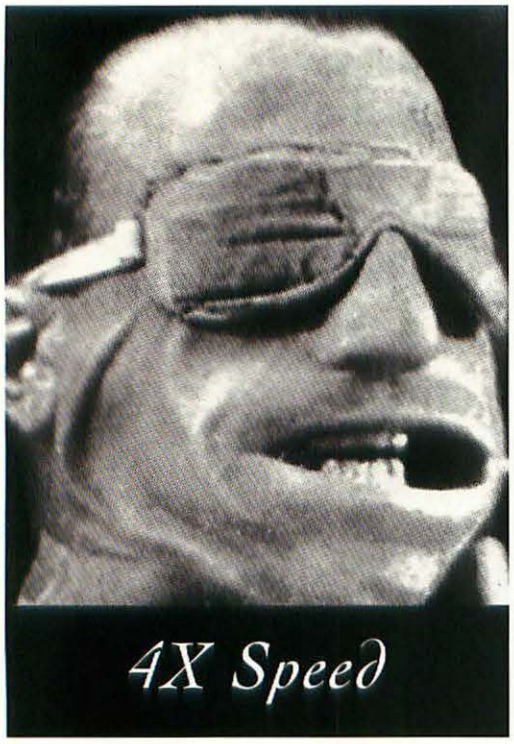
A bit later in the HotWired interview, Elmer-DeWitt relates a tidbit that Rimm volunteered: "'We talked to just about everybody; the one group I didn't want to talk to was the Christian Coalition.'" There is now strong evidence that the Christian Coalition and other right-wing antiporn activists had advance, detailed knowledge of the study, so why did Rimm mislead Elmer-DeWitt? Probably to put him off the trail and convince him of Rimm's libertarian bona fides.

## The Unanswered Question

Perhaps the most interesting question of all is, having snookered the intelligentsia, how did Rimm snow the religious-right activists as well? As yet, none of that segment of the antiporn contingent—not even Deen Kaplan, vice president of the National Coalition for the Protection of Families and Children and an editor of the *Georgetown Law Journal*—is telling. **m**

MIKE GODWIN (**mnemonic@eff.org**) is staff counsel for the Electronic Frontier Foundation. A longer version of this article can be found at HotWired's Web page (**http://www.hotwired.com/special/pornscare/**).

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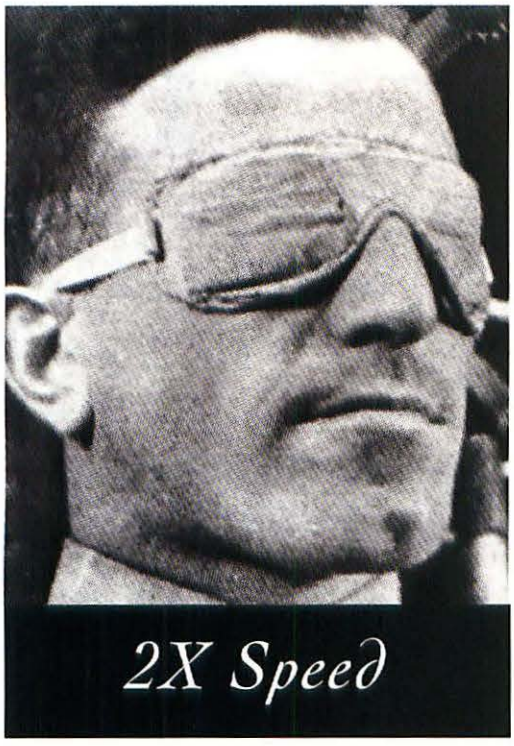
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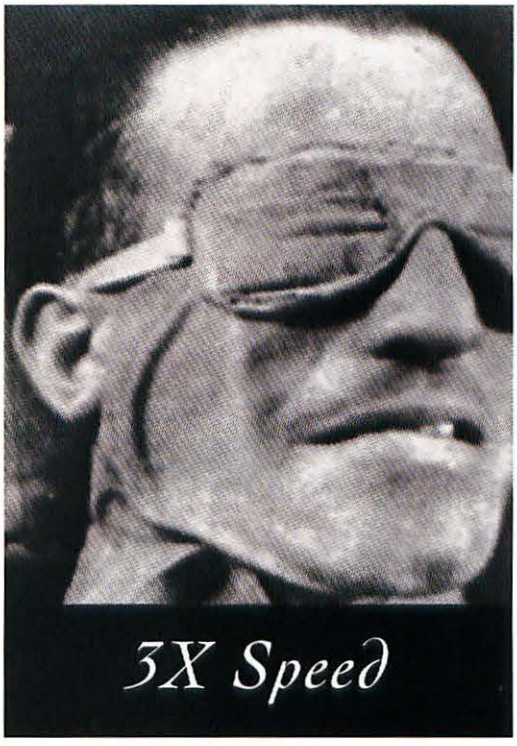
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